University of Alberta

The Management of Relational Risk in Project Based Strategic Alliances

by

Conor Vibert

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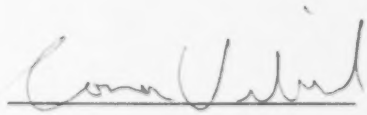

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ABSTRACT

The domestic consulting engineering industry is an industry in turmoil. A shrinking home market, more demanding clients, and higher risk major capital projects are increasingly forcing firms in this industry to co-operate as never before in order to survive. These factors have forced many firms to undertake project based work with worrisome or high relational risk partners. Within this context this study sought to empirically explore the question, "how do alliance partners manage relational risk?" and "what are the determinants of relational risk?" Relational risk was conceptualized as the "perception of opportunistic behaviour by a partner." It was hypothesized that counter to a growing stream of theoretical insight, the written contract matters.

In order to test this idea, a measure of performance throughout the life of an alliance was conceptualized. Processual performance took the form of transaction costs incurred to monitor partner behaviour, perceptions of operational flexibility, and the perceptions of fair treatment by partners.

A questionnaire and open ended questions were used to collect data from executives of 24 consulting engineering firms regarding their experiences of good and bad project based strategic alliances.

A clear linear relationship was found between the specificity or level of detail included in the partner agreement and processual performance. Statistical evidence indicated that tighter contracts were associated with perceptions of higher operational flexibility, and higher fair treatment. Qualitative evidence suggested that in situations of higher relational risk, the use of more detailed contracts led to perceptions of higher fair treatment, higher operational flexibility, and lower transaction costs among partners. When partners did not protect themselves contractually, the opposite results occurred.

How might consulting engineering firms gauge how much risk a partner adds to an alliance relationship? This study found that the best indicator of trouble is a company's awareness that a partner's actions might be a surprise. A second indicator is a large difference in the financial risk tolerance or importance of the project for each partner.

The significance of these results, the increasing use of project based alliances, and the similarity of such alliance forms to commonly used sub-contract arrangements point to the need for further research and the generalizability of these findings beyond the consulting engineering industry.

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Chapter 1

INTRODUCTION

Interfirm collaboration is becoming an increasingly common occurrence in the modern economy. Daily, there are reports of different cooperative linkages found in various industries. For example, a reader learns that engineering firms Monenco-Agra Inc., SNC Lavalin Inc., Newfoundland Engineering Co. Ltd. and a number of foreign firms are linking to form the Newfoundland Offshore Company in order to design the offshore components of the Hibernia Oilfield Project. On the same day, a strategic partnership is announced between the Shell Oil Company and Bechtel Inc., allowing Shell to concentrate its technical resources on the production of its products. Similarly, the reader might find details regarding the breakup of the IBM - Apple Computer joint venture which had been conceived to design computer products for the twenty first century. Further on in the same newspaper, an examination of Chrysler's stock price might cause a shareholder to wonder how much of the price rise was due to Chrysler's relationships with its Japanese competitors.

As one researcher writes,

> "Our enterprise system is on trial. Companies are now expected to provide sustained growth in the face of global competition and social constraints. This presssure has fomented a search for creative ways to improve our adaptability in managing business firms. Joint ventures provide one of these hopes. Indeed during the last three years the number of joint ventures has increased sharply" (Newman, 1985).

While managers continually look for more effective ways to run their enterprises, researchers have been challenged to comprehend the resulting new ways of cooperating. In one area - alliance motivations, comprehension has kept pace with usage. Firms form alliances or joint ventures to reduce transaction costs, enhance competitive position, transfer organizational knowledge (Kogut, 1988) or as a result of their position in a social network (Eisenhardt & Schoonhoven, 1994).

From a transaction cost perspective, alliances serve to resolve high levels of uncertainty over the behaviour of two or more contracting parties. Lowering uncertainty becomes the primary concern of alliance partners who choose to cooperate in order to lessen production or acquisition costs. In cases where the assets of the partners are specialized to the transaction, such production or acquisition costs would be higher if undertaken alone. A second motivation focuses on a partner's position vis a vis rivals and suggests that two or more firms will ally in order to improve competitive positioning be it through collusion or depriving competitors of potential allies. A third motivation - learning, exists when one firm wishes to maintain an organizational capability while benefitting from another's current knowledge or cost advantage or when one or both firm's desire to acquire the other's organizational know how. Finally allying may occur as a result of a firm's social contacts. Previous cooperative histories (Kogut, Shan, & Walker, 1992) and past partnering experiences with specific firms (Gulati, 1993) enhance an organization's chances of being invited to cooperate. As a result, a company's position in a network of firms often determines its entry into alliances (Eisenhardt, & Schoonhoven, 1994). Although not all inclusive, these rationales provide a useful summary of existing motivations.

Given this understanding and the increasing use of alliances, one would expect a high degree of success with this new hybrid form of organization. Yet research suggests otherwise (Kohn, 1990; Niederkofler, 1991): on the one hand, alliances are increasing in

popular usage, but on the other, their effectiveness is problematic. Indeed alliance failure rate estimates, when defined in terms of survival, range as high as 70% (Harrigan, 1985; Geringer & Hebert, 1989; Porter & Fuller, 1986). Clearly, our understanding of most aspects of alliances has not kept pace with their occurrence. One author concludes that the lack of coverage in the strategic management literature reflects a serious weakness in North American managers knowledge and understanding about cooperative linkages:

> "except for industries like oil exploration, Asian and European firms have accumulated more experience in using and operating joint ventures successfully than U.S. managers have. Because the 1980's (and 1990's) will be an era of rapid technological innovation and challenges from imports and deregulation, U.S. firms must increase their understanding of why joint ventures are desirable and how to use joint ventures effectively, and they must do so quickly" (Harrigan, 1985).

Several explanations have been given for the high failure rate of alliances. These include the use of inappropriate management structures and problems in the relationship between partners. There are no clear conclusions however, on the causes of success or failure (Anderson, 1990: Kogut, 1988). The purpose of the present dissertation is to better understand the determinants of alliance success. An attempt to accomplish this is made by exploring how far the nature of the contract (in particular its specificity) affects the operational functioning of the alliance.

This thesis may be summarized as follows. After the decision is made to pursue an alliance, partners will share and seek to minimize the effects of a major operational concern: namely that characteristics of the partner(s) will introduce high levels of what we

term relational risk (the threat of cheating behaviour) to the alliance and necessitate the undertaking of specific managerial and organizational safeguards. When relational risk is effectively managed the outcome will be, in a relative sense, low levels of transaction costs, high levels of operational flexibility and a perception of having been treated fairly. Relating to performance throughout the life of an alliance, the suggestion is that these three processual performance measures will allow partners to maximize the attainment of strategic objectives and financial returns. In their quest for high performance, alliance managers will seek to manage relational risk between partners using the specificity of the intra-alliance agreement as their primary tool.

This undertaking requires clarification at the outset of two issues whose confusion has unnecessarily contributed to present misunderstanding. The issues are: what is an alliance? and, what is meant by success/effectiveness?

Types of Alliance

An examination of the literature points to an increasing interest in alliances. However, closer examination indicates a degree of confusion or ambiguity as to what constitutes an alliance. Much of this confusion stems from the wide variety of possible arrangements, definitions, and classificatory schemes used to analyze such cooperative arrangements. As an example, Murray and Siehl (1989) argue that the appropriate spectrum ranges in complexity from spot contracts at one extreme to mergers and acquisitions at the other extreme. In relation to classificatory schemes, researchers have analyzed alliances in terms of whether they are equity arrangements (e.g. whether partner's invest equity in the alliance or not), the means of venture control (e.g. whether the alliance management is independent, shared between partners, or whether one partner dominates), the primary motivation, (e.g. whether to resolve competitive conflicts or whether to affect the competitive positioning of firms relative to rivals), and the base industry under study

(e.g. manufacturing, film, engineering, etc.). This has created a situation where alliances are frequently targeted for empirical study based on specific dimensions but then these findings are inappropriately generalized to the entire universe of cooperative arrangements. This inconsistency in conceptual language has hindered the development of understanding.

In this dissertation, the response to this shortcoming is the assumption that different forms of alliance exist and that generalizations should be made strictly to the form under study. These forms represent configurations of structure and strategy (Miller & Friesen, 1984). This study focuses specifically on one alliance form, the project based joint venture. As discussed in chapter three, other alliance configurations include adhoc pools where firms exchange assets temporarily, research consortia, and full blown joint ventures where separate legal entities are established (Lorange & Roos, 1992). The project based form of joint venture is examined in the context of the domestic engineering industry where two or more firms cooperate to provide design, project management, construction, or production related services for domestic or international clients. Within this form there exists as well a continuum of types. Attention is directed to the most commonly used type, the prime consultant - sub-consultant arrangement. A summary of these alliance types is found in Figure 1.

Figure 1

A TYPOLOGY OF STRATEGIC ALLIANCE FORMS

	Short Term Life Span	Long Term Life Span
Product or Service Retained by Alliance Partners	AD-HOC POOL	CONSORTIUM
Product or Service Retained by the Client or the Alliance Itself	√ **PROJECT BASED JOINT VENTURE**	FULL BLOWN JOINT VENTURE

(Adapted from Lorange and Roos 1992)

In this dissertation the terms prime contractor and sub-contractor will be used inter-changeably with the terms prime consultant - sub-consultant respectively, as the projects may include production and construction aspects. When referring to project based joint ventures, the plural term "alliance partners" will refer to any firm involved in a prime consultant -sub-consultant type relationship with the exception of the project client. When used in its singular form, a "partner" will refer to a sub-consultant from the point of view of a prime consultant or prime consultant from the point of view of a sub-consultant.

Definitions of Success

Despite their increased usage, available evidence suggests that alliances are poor performers with high failure rates (Gomes-Casseres, 1987; Schaan, 1988; Harrigan, 1988). Researchers posit numerous theoretical explanations for why this is so including the impact of hostile environments and inappropriate management structures. Yet this body of literature also highlights disagreement as to what actually constitutes alliance success or effectiveness. In their quest to understand alliances, several performance measures have been used ranging from the *subjective* (e.g.satisfaction) to the more *objective* financial criteria (e.g. profitability) (Geringer & Hebert, 1989). However, the measures are often inappropriate and fail to reflect the alliance partners' measures of performance (Anderson, 1990). Yet, critics suggest that because of the hybrid nature of an alliance, it may also be hard to distinguish between success or failure. Examining 149 joint ventures located in the U.S., Kogut, (1988) concludes that the reasons for the termination of a joint venture frequently lie in the motives responsible for its creation. Alliances may be vehicles by which knowledge is transferred and by which firms learn from one another. When these are the goals of the venture, success often means the termination of the alliance. In a simple sense, it appears that alliance success or effectiveness is not a well understood phenomena.

This dissertation discusses and attempts to overcome some of this confusion by defining success in terms of three perceptually measured components. The first measure refers to whether a firm's expectations of a partner's behaviour are met. That is, do the partners perceive themselves to be treated fairly throughout the life of an alliance? The second measure refers to the perceived level of transaction costs incurred to monitor partner behaviour. Finally, the third measure refers to the perceived level of operational flexibility experienced by a firm throughout the life of the alliance.

The Basic Hypothesis

The basic hypothesis is that firms entering an alliance do so with the knowledge that partners to an alliance may behave opportunistically. That is, alliance participants incur relational risk, which is defined as the uncertainty of partner behaviour. Partners seek to manage relational risk by framing the contract of an alliance in such a way as to minimise the possibility for opportunistic behaviour. In particular, high relational risk is managed through high contractual specificity i.e., a key means of managing relational risk is the contract itself. This study emphasizes the contents of legal contractual agreements, an important but often taken for granted (by researchers) component of alliances (Parkhe, 1993; Ring & Van De Ven, 1994).

Most managers would probably agree that long term corporate profitability drives decisions to enter into an alliance. Yet the previous discussion of alliance motivations indicates that in the short term, other measures of performance may be more appropriate. Further, the inherent environmental uncertainties which accompany any major capital or engineering project provide reasons to suggest that poor financial performance is not always related to poor partner performance. Thus how might a firm gauge the worthiness of a partner for future cooperation? The suggestion is that factors which play a role throughout the life of an alliance relationship should be examined.

With this in mind, the previously discussed dimensions (fair treatment, flexibility, and transaction costs) are used to judge partner peformance. This study suggests a number of relationships. First, the effect of higher relational risk on partners, without the protection of a contract, will be to lower perceptions of fair treatment and flexibility, but raise perceptions of transaction costs (see figure 2). Second, higher relational risk will be matched with higher levels of contract specificity in the alliance agreement. Third, the use of contractual specificity to control relational risk will have an effect on these same

perceived measures of performance (see Figure 3). The exact relationships, specified in Chapter 2, depend upon the interaction of different levels of relational risk and contract specificity.

Figure 2

LINKING RELATIONAL RISK TO OPERATIONAL PERFORMANCE

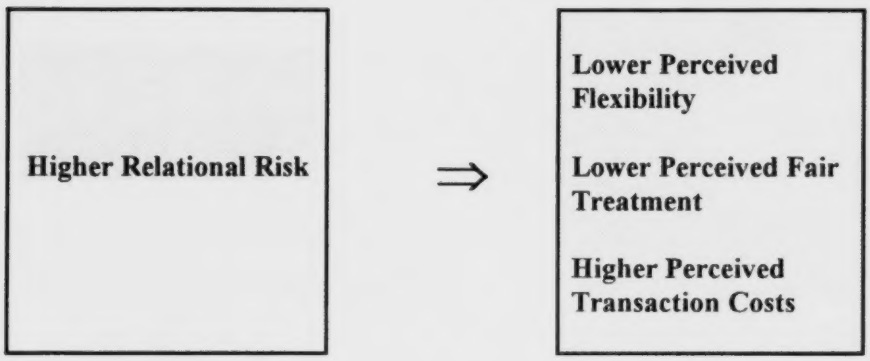


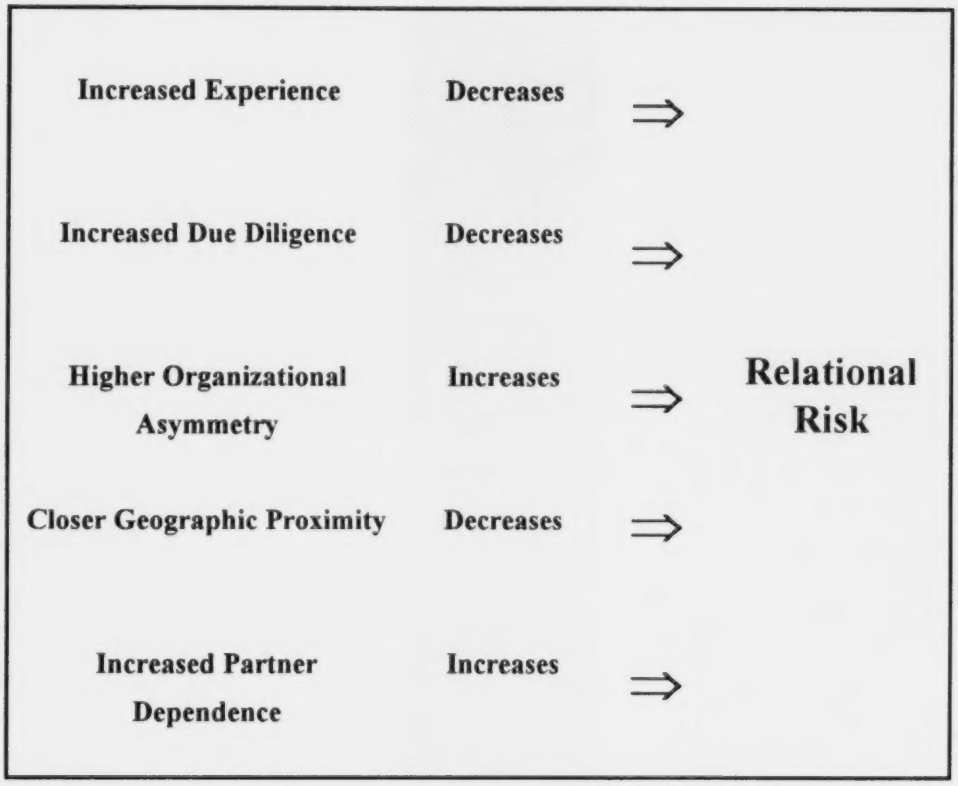
Figure 3

LINKING RELATIONAL RISK TO CONTRACT SPECIFICITY

Anticipating that these relationships hold, the warning signals or flags of intra-alliance relational risk are also explored. These include: (i) experience with alliances (i.e., whether the prime consultant or sub-consultant to an alliance has experiences of alliances, of the specific partners, of the specific client, and the nature of that experience); (ii) informational due diligence (i.e., the extent to which the firm seeks appropriate information vis-a-vis the task and the partners); (iii) organizational asymmetries (i.e., where the partners are unequal in their characteristics and the significance of these inequalities); (iv) geographical proximity; and (v) partner dependencies (i.e., the extent of dependence of an alliance partner(s) on other firms or partners for the completion of its portion of the project work). Figure 4 presents these arguments.

Figure 4

UNDERSTANDING THE WARNING SIGNALS OF RELATIONAL RISK



The relationships hypothesized above appear to fit most appropriately in the domain of bi-lateral relationships. The suggestion is that from the point of view of both the prime consultant and the sub-consultant, the management of relational risk remains the same for bilateral and multilateral relationships. The reasoning behind this is that a prime consultant will normally contract individually with a sub-consultant regardless of the company's work related interdependencies with other firms or partners.

Although academic in nature, this research also has applications for practitioners. By focusing on success, the hope is to provide a useful tool to guide managers in their selection of projects and partners as well as a means to clarify their choice of contractual agreement. By emphasizing the agreement's effects on operational flexibility, its customized nature, and by focusing exclusively on project based alliances, this research controls for variations across industries and alliance types.

The preceding discussion establishes the contextual setting, focus and broad objectives of this dissertation. Chapter 2 presents a review of the relevant existing strategic alliance literature, constructs a model of alliance success based on transaction cost economics and agency theory and posits hypotheses to guide the research. Chapter 3. Chapter 5 concludes the describes the design and methods used in this research. The chapter includes the explanation of the methods of data collection and the development of the necessary instruments. The chapter also outlines sample selection procedures and summarizes the salient characteristics of the research population. Chapter 4 presents the results of the study and discusses their significancedissertation with a summary of the results, their theoretical and managerial implications and a brief discussion of the direction future research might take on this important topic. The appendices and references follow these chapters.

Chapter 2

THEORETICAL REVIEW

As noted in the previous chapter, in recent years it has become a rare occurrence to open a daily business paper without seeing mention of a strategic alliance. Indeed more strategic alliances have been announced since 1981 than in all the previous years combined (Anderson, 1990). Numbers of actual alliances or joint ventures (I use the terms interchangeably) are hard to come by (Kogut, 1988). Yet the sample sizes of recent scholarly studies points out their growing importance. Examining public announcements in *The Economist* and *The Financial Times* over the 1975-1986 time period, Hergert and Morris (1987) acquired a database of 839 alliances. A study by Harrigan (1985) counted 895 joint ventures in 23 industries. Using a more recent time period, 1983 to 1988, Parkhe, (1993) identified 349 firms involved in alliances. Although not all inclusive, the magnitude of these sample sizes points to the growing importance of the alliances for conducting business operations.

There are many reasons why firms enter alliances. Kogut (1988) has suggested three, and Eisenhardt and Schoonhoven (1994) a fourth. Kogut classifies the reasons why firms use alliances according to whether they are intended to aid strategic positioning, reduce costs, or acquire learning, The latter two researchers suggest inclusion in corporate networks as a reason.

Existing research regarding alliances suggests that from a *strategic positioning* perspective firms cooperate in order to diversify markets or products, alter the fundamentals of competition within an industry, or attain strategic symmetry. Firms use alliances for diversification objectives by sharing marketplace knowledge (Berg, Duncan, & Friedman, 1982; Auster, 1990), selectively choosing a partner to enter new or difficult markets or lines of business (Vernon, 1977; Davidson, 1982; Killing, 1983; Harrrigan,

1988; Contractor & Lorange, 1988), overcoming government imposed barriers (Murray & Siehl, 1989) or obtaining new clients. Possible drawbacks to this reasoning include creating a future competitor, allowing a partner to gain more from the alliance than is warranted (Powell, 1987; Contractor & Lorange, 1988), opening up your firm's capabilities to imitation by the partner, or simply choosing the wrong partner (Powell, 1987).

Despite these drawbacks, alliances may allow competitive relationships to be altered by making use of complementary partner capabilities and resources (Harrigan, 1986; Gray & Yan, 1990) or by ganging up on other competitors (Kogut, 1987; Contractor & Lorange, 1988; Murray & Siehl, 1989). Again, such a strategy may backfire by helping to overly stengthen a partner or erode one's own competitive position(Porter & Fuller, 1986; Powell, 1987; Bresser, 1988).

Organizations may also advantageously alter the structure of their industry by engaging in venture activity which shapes and patterns the nature of competition in an industry (Contractor & Lorange, 1988; Porter, 1990; Harrigan, 1985; Kogut, 1988; Lei & Slocum, 1991). The risks of this approach are a decrease in organizational innovation, the evolution of non market drive prices (Caves, 1982; Sherer, 1982), and industry standards set for the benefit of a few powerful corporations (Prahalad; 1990).

A second reason for alliance participation is a *lowering of costs*. Alliances allow partners to obtain economies of scale and scope, transfer or pool technology, lower financial risk (Berg, Duncan, & Friedman, 1982; Harrigan, 1986; Contractor & Lorange, 1988), improve access to capital (James, 1985; Killing, 1983), and reduce partner behaviour uncertainty. From this perspective, allying may be problematic due to the inherent executive promotion opportunity costs, increased taxes and unnecessary incorporation rules in some jurisdictions, transfer pricing disagreements (Contractor &

Lorange, 1988) and increased coordination costs (Moxon & Geringer, 1985; Contractor & Lorange, 1988).

The comments of one engineering firm executive highlight the importance of cost in the engineering industry.

> "If we could, we would do every project alone. However, clients are increasingly expecting work to be performed in larger chunks. On a major world scale project, 50 million dollars is needed simply to be a player. Bechtel may have that type of money, but our line of credit is less than a fifth of that amount. We are a relatively large firm but we need to cooperate in order to compete."

Joint ventures may also be the result of a firm's efforts to *learn from others* or retain capabilities through the transfer of tacit knowledge (Kogut, 1987, 1988; Westney, 1987; Lyles, 1987; Hagedoorn, 1993). Alliances are encouraged under two conditions:

> "one or both firms desire to acquire the other's organizational knowhow; or one firm wishes to maintain an organizational capability while benefitting from another firm's current knowledge or cost advantage" (Kogut, 1988; 323).

Canatom, the joint venture company formed by Monenco Ltd. and SNC-Lavalin represents an example of a learning motivated alliance. This venture allowed both firms to

remain players in the nuclear industry, benefit from each other's complementary knowledge in the area, and retain capabilities during lean times.

Finally, alliance participation may result from a firm's participation in a *social network* of other firms and executives. In many cases joint ventures are formed because of a firm's social contacts (Eisenhardt, & Schoonhoven, 1994). Previous cooperative histories (Kogut, Shan, & Walker, 1992) and past partnering experiences with specific firms (Gulati, 1993) lead to offers to participate.

Monenco - Agra's tentative re-entry into the Iranian market provides an example of the importance of social networks. Jack Cressey, Monenco's chairman in the late 1980's and early 1990's had previously worked for Monenco in Iran prior to the 1979 revolution. Monenco's interests in the country were nationalized shortly after the fall of the Shah forcing Monenco to exit the market. Throughout the 1980's Mr. Cressey, maintained informal, although infrequent contact with certain Iranian officials. In the late 1980's, faced with a deteriorating economy, a number of Western firms were invited to open a dialogue with the Iranian government for the purpose of exploring development opportunities. Jack Cressey was one of the executives contacted and invited to visit the country. The culmination of this visit was the signing of a joint venture agreement with the remnants of Monenco's former subsidiary allowing Monenco's re-entry into the market.

A second example of the importance of social networks was the inclusion of a relatively small design firm in pipeline construction alliance in the early 1980's in Western Canada. The design firm's chairman explained that his firm's participation was due primarily to a lifelong friendship of his with the chairman of the main contracting firm. Both of these individuals had attended high school together.

In sum, existing research suggests that organizations ally to lower costs, to alter competitive positioning or to acquire knowledge. It is also suggested that alliances form

because of a firm's (or its executives) membership in a network of other firms. Despite these reasons, many alliances do not meet their objectives. The next topic for discussion is the poorly understood dimension of alliances, the reasons for their failure and success. In developing this thesis, the argument is made that much of the literature on the success or otherwise of alliances is confusing because inadequate attention has been paid to: (a) the *type* of alliance; and (b) the definition of what *constitutes* performance. The former topic is dealt with in the methodology chapter of this dissertation. The latter topic is addressed next.

The Problem of Failure

The increased use of strategic alliances or joint ventures has met with mixed success. Research suggests that despite their growing popularity among managers, joint ventures are relatively unstable forms that do not perform well and are prone to failure (Gomes-Casseres, 1987; Schaan, 1988; Harrigan, 1988; Niederkofler, 1991). Indeed numerous studies suggest that historically alliances have experienced relatively low success rates (Franko, 1971; Beamish, 1985; Harrigan, 1986; Dymsza, 1988; Kogut, 1989). This has necessitated research to explore the reasons for failure and success among cooperative ventures with a number of theoretical and empirically derived explanations for alliance failure being the result.

Forces external to the firm provide reasons for one researcher. Kogut (1986) suggests that hostile competitive environments serve to block or slow an alliance's achievement of its preestablished goals. Others argue that even when such environments are recognized, inappropriate adaptation to, and ignorance of changing environmental conditions serve to decrease the performance expectations of cooperative arrangements (Gomes-Casseres, 1987; Kogut, 1988). Within the alliance, inappropriate management structures or intra-alliance control characteristics (Killing, 1982, 1983; Beamish, 1984; Schaan, 1988; Bleeke & Ernst, 1991; Gray & Yan, 1992;), intra-alliance conflict (Kogut, 1988b; Gray & Yan, 1992; Dymsza, 1987), inappropiate management skills (Niederkofler, 1991) and dissimilar partner asset sizes, cultures and alliance experience (Harrigan, 1988; Bleeke & Ernst, 1991) are believed to lead to failure. Harrigan (1985) and Dymsza (1987) argue that a lack of complementarities regarding missions, resources, and managerial capabilities among partners (Harrigan, 1985; Dymsza, 1987) further increase cooperative difficulties. As well, inappropriate management attention or a lack of due diligence during alliance formation (Fornell, Lorange & Roos, 1990; Gomes-Casseres, 1987) often leaves partners unprepared to deal with the operational conflicts inherent in

running hybrid organizations. Finally, a lack of contractual clarity linking the partners often increases interfirm conflict (Dymsza, 1987) providing one more reason for negative results. (This last point is important for this dissertation. It is addressed later).

Because of this body of research an awareness has taken hold that the definition of cooperative performance (success or failure) is itself unclear (Anderson, 1990; Geringer & Hebert, 1989; 1991). As with the debate on organizational effectiveness, the issue of what constitutes performance has not been resolved. There is no consensus on an appropriate definition. (Geringer & Hebert, 1989; 1991).

A long history of research into joint ventures is only now beginning to accumulate into a voluminous collection of empirical studies which attempt to measure success or include performance as a dependent variable. In part, the recency of most studies relates to the difficulty of acquiring information (Kogut, 1988). However, those that do examine performance (Franko, 1971; Berg, Duncan & Friedman, 1982; Killing, 1983; Harrigan, 1985; Kogut, 1988; Koh & Venkatraman, 1991; Geringer & Hebert, 1991; Parkhe, 1993) rarely use the same measures. Much of this incongruity stems from the considerable variety of available performance measures. These range from the more subjective and perceptual to more rigorous objective financial criteria (Geringer, & Hebert, 1989). Objective measures used include the duration of the venture (Harrigan, 1988; Kogut, 1988; Bleeke & Ernst, 1991), survival or liquidation of the venture (Franko, 1971; Killing, 1983; Singh, 1995), financial indicators (Tomlinson, 1970, Dang, 1977, Renforth, 1974), changes in share prices (McConnell & Nantell, 1985; Koh & Venkatraman, 1991), a composite index of financial indicators (Awadzi et al, 1986), change in market share (Burgers, Hill, & Chan, 1993), average growth in sales (McGee, Dowling, & Megginson, 1995), number of patents and startups (Shan, Kogut, & Walker, 1995), and realization of strategic objectives (Murray & Siehl, 1991; Parkhe, 1993a,b).

On the other hand, studies by Killing (1983), Schaan (1983), Beamish (1984), and Geringer and Hebert (1989) include subjective (primarily perceptive) measures, based on a single item scale measuring the parents satisfaction vis-a-vis the performance of the joint venture. This leads to the question of perspective. From whose point of view should performance be addressed? Possible answers include stakeholders, a parent firm, both parent firms, the employees and/or the joint venture itself. Researchers argue for the use of various approaches with empirical (Schaan, 1983; Beamish, 1984; Murray & Siehl, 1991; Kogut, 1988; Harrigan, 1988) and conceptual (Gray & Yan, 1992; Niederkofler, 1991; Geringer & Hebert, 1989) measures from both parents' points of view predominating. As with objective and subjective measures, no consensus exists among researchers regarding whose point of view should predominate.

Despite the great variety of measures, there exists little consensus as to how or if firms actually evaluate their own joint venture performance (Anderson, 1990). For the most part, researchers do not know how executives judge the success or failure of their ventures. When they do, circumstances often complicate performance accounting. Most studies, for example, examine multiple industries allowing only the most general of conclusions. Secondly, what might be acceptable performance for a large firm in a resource plentiful environment may not be acceptable performance for a small startup firm in a hostile environment.

For example, consider a hypothetical alliance involving these two types of firms as they attempt to gain a foothold in China. In this case, because of financial constraints, the temporal window of opportunity may be a number of years for the large firm but only a matter of weeks for the startup firm. A norm of conducting business with the Chinese is that numerous visits and an established relationship are necessary in order to secure a contract. Upon the completion of two such visits, the larger partner might be satisfied with the development of new contacts and the inherent learning accompanying these

contacts. On the other hand, the smaller partner may define performance simply in terms of the income statement. At this point it probably views the alliance as incurring significant travel costs but few revenues. With fewer financial resources, the smaller partner might consider the alliance to date a failure. The larger partner, however, might see it at that point in time as simply in the process of developing future revenue enhancing contacts and contracts.

Kogut's (1988) insights are indicative of this problem. He suggests the reasons for the termination of a joint venture frequently lie in the motives responsible for its creation. Success or failure often depends upon the achievement of the purpose for which the alliance is formed (Franko, 1971; Kogut, 1988; Murray and Siehl, 1991). As discussed earlier, these motivations include lowering transaction costs, enhancing competitive position, increasing learning or participating because of membership in a social network. However, most empirical studies which test performance do not illustrate motivations or do so using secondary data sources. As a result, the linkage between alliance motivations, a[illegible] performance is weak (Powell, 1990). Finally, in some cases, it may be hard to distinguish between success and failure. Where imitation, knowledge transfer, or organizational learning is the goal of the collaborative arrangement (Kogut, 1988; Powell, 1987) or when ownership changes after foreign entry represent adapations to changes in environmental conditions (Gomes Casseres, 1987), the sign of success may be joint venture termination (Kogut, 1988; Powell, 1987).

To summarize, there exist a growing body of empirical studies of alliance performance. However, few use the same measures and many of these may be inappropriate because of the failure to take account of motivations and/or goals of the alliance partners. Further, many studies compare alliances based on the slimmest of contextual similarities, which is usually a multi-industry sample. Table 1 lists a significant

number of published studies which empirically test performance as a dependent variable and highlights some of our main points. Table 2 summarizes the findings of these studies.

Table 1

RESEARCH STUDIES OF ALLIANCE PERFORMANCE

Author	Date	Industry	Motivations	Performance Measures Examined
Tomlinson	1970	Multiple	Yes	Satisfaction level of foreign partner with local associate overall impression of effectiveness
Franko	1982	Multiple	Yes	Survival, changes in ownership
Berg Duncan & Friedman	1982	Manufacturing & Mining	Yes	Parent profitability
Killing	1983	Multiple	No***	Survival-failure rate, managers subjective assessment
Mcconnell & Nantell	1985	Multiple	No	Parent share price
Beamish	1985	Multiple	Yes*	Managerial assessment of stability
Harrigan	1988	Multiple	Yes	Duration
Gomes Casseres	1987	Multiple	No	Changes in ownership
Kogut	1988	Multiple	Yes	Survival-termination of venture
Harrigan	1988	Multiple	Yes	Survival - duration, & sponsor indicated assessment of success
Koh & Venkatraman	1991	Information Technology	No**	Parent share price
Geringer & Hebert	1991	Manufacturing	No	Subjective parent satisfaction & attainment of expectation; Objective survival, stability, & duration
Bleeke & Ernst	1991	Multiple	No	Survival, duration
Parkhe	1993	Multiple	No	Fulfillment of strategic needs, net spillowver to parents, overall performance, or expectations met.
Burgers, Hill & Chan	1993	Global Auto industry	No	Change in market share
Mohr & Spekman	1994	Auto industry	No	Change in market share

Table 1 (cont.)

RESEARCH STUDIES OF ALLIANCE PERFORMANCE

Author	Date	Industry	Motivations	Performance Measures Examined
Millington & Bayliss	1994	Multiple manufacturingindustries	Yes	Structure of Competition in the European Union
Hagedoorn & Schakenrad	1994	Personal computer industry		Partnership Success (a) Dealer sales volume (b) Satisfaction with manufacturer support (c) Satisfaction with profit support
Shan, Walker & Kogut	1995	Biotechnology industry	No	Number of Biopharmaceutical patents (Innovative ouput) Number of start-up agreements (Research agreements)
McGee, Dowling & Megginson	1995	Multiple High technology industries	No	Average growth in sales
Gulati	1995	Multiple industries	No	Existence of equity or non-equity basis of ownership
Singh	1995	Multiple high technology industries	No	Business survival as measured by business disolution or business divestment
Cullen, Johnson and Sakano	1995	Multiple industries with Japanese partners	No	Partner commitment or strength of involvement of partner in international joint venture.
Dussauge & Garrette	1995	Global aerospace industry	No	Industry analysts and corporate executive judgement regarding technical quality, commercial success and financial results of the project.

* Did not link motivations to performance

** Inferred motivations from news and business media reports into Salter & Weinhold adaptation of Ansoff (1965) corporate strategy framework

***Linked partner selection motivations to management style

Table 2

SUMMARY OF ALLIANCE PERFORMANCE RESEARCH STUDY FINDINGS

Author	Date	Data Source	Summary
Tomlinson	1970	Survey	Developed and tested a model of a series of relationship decisions and structural characteristics - involved in the joint joint venture process. Also developed a set of partner selection criteria for British firm operations in India and Pakistan.
Franko	1982	Secondary	Examined instability of foreign ventures of U.S firms in terms of change of strategy as proxied by changes in organizational structure. Found higher instability for organizations which divided into world regional areas. Frequent intrafirm resource transfers lead to more unstable Jvs.
Berg Duncan & Friedman	1982	Secondary	Examined the determinants of cross industry variation in JV participation rates for a broad range of mining and manufacturing industries. Found J.V.'s are an important component of corporate strategy for certain firms and they can also be sources of innovation by joining the specialized technologies and resources of corporations.
Killing	1983	Survey	Linked JV management (control) style to failure rates. Shared management JV's failure more often than dominant parent JV's. Discussed when and how to use both forms.
Mcconnell & Nantell	1985	Secondary	Found significant gains for shareholders from JV's, gains similar to those of merging, & smaller partners earn larger excess rate of return. JV's motivated by synergies and carried out for efficiency reasons.
Beamish	1985	Survey Secondary	Demonstrated that developing and developed countries represent different external environments for JV's of multinationals. JV's in LDC's had higher rates of instability and greater managerial dissatisfaction.
Harrigan	1988	Survey Secondary	Examines multiple industries and attempts to explain why certain patterns of cooperative strategies have been more prevalent within some U.S. industries than within others. Suggests which joint venture strategies are inappropriate within certain corporate and competitive contexts.
Gomes Casseres	1987	Secondary	Compared instability of large jointlyowned JV's of U.S. firms with those of wholly owned subsidiaries. Found in some cases, instability is a sign of success, not failure.
Kogut	1988	Survey	Examined the linkage between JV formation motivations and JV termination motives. Found reasons for the latter frequently lie in the former.

Table 2 (cont.)

SUMMARY OF ALLIANCE PERFORMANCE RESEARCH STUDY FINDINGS

Author	Date	Data Source	Summary
Harrigan	1988	Survey Secondary	Examined the impact characteristics or strategies such as partners' or parent venture traits on effectiveness. Found little impact and concluded industry level traits more important in determining success.
Koh & Venkatraman	1991	Secondary	Examined impact of JV formation on parent firm's market value. Found: JV formation announcements increase market value; and magnitude and significance of market valuations vary across types of JV strategies.
Geringer & Hebert	1991	Secondary**	Tested the reliability and validity of a range of objective and subjective measures of IJV performance.
Bleeke & Ernst	1991	Survey	Examined success factors of multinational JV's. Found: alliances work best for related business or new geographic areas; strong and weak company JV's rarely work; even split financial control works best; most terminated JV's acquired by a partner.
Parkhe	1993	Survey	Examined the impact of structural dimensions (proximate explanations of cooperation) on alliance performance. Found positive relationship.
Burgers, Hill & Chan	1993	Survey	They argued that a reduction of demand and competitive uncertainty are two important alliance formation motives. Examining the global auto industry, they found that the use of such alliances does reduce such uncertainty, and the frequency of alliance usage depends upon the levels of this uncertainty across firms.
Mohr & Spekman	1994	Survey	They examined the vertical partner relationships between manufacturers and dealers to determine attributes of success. They found that the most important attributes are commitment, quality, coordination, trust, communication participation, and conflict resolution technology.
Millington & Bayliss	1994	Survey Secondary	Through studying European manufacturing companies they found that alliances do not significantly reduce the level of competition in the European Union. Large firms ally due to competitive pressures while smaller firms do so to enter new foreign markets.
Hagedoorn & Schakenrad	1994	Survey Secondary	Examined the effect of strategic technology partnering on company performance in the personal computer industry. They found that the greater the presence of coordination, commitment, trust, communication quality, information sharing, participation, joint problem solving, and other factors, the greater the success of the partnership.

Table 2 (cont.)

SUMMARY OF ALLIANCE PERFORMANCE RESEARCH STUDY FINDINGS

Author	Date	Data Source	Summary
Shan, Walker & Kogut	1995	Secondary	They tested the relationship between interfirm cooperation and the innovation output of start-up biotechnology firms. They found that cooperation affects innovation.
McGee, Dowling & Megginson	1995	Secondary	They examined the effect of management experience on alliance performance. They found that cooperative arrangements are most beneficial to new ventures whose management teams possess the most experience experience.
Gulati	1995	Secondary	Examined the factors that explain the choice of governance structures. They found that repeated alliances between two partners are less likely than others to be organized using equity safeguards.
Singh	1995	Secondary	Examined the impact of technological complexity on business survival and the utility of interfirm cooperation in overcoming the challenges of commercializing high complexity technology. Business dissolution and divestment risks were found to increase with complexity. Hybrid links moderated the dissolution risks for high but not low complexity businesses.
Cullen, Johnson and Sakano	1995	Survey	They examined the antecedents of commitment in international joint ventures from the point of view of Japanese and non-Japanese partners. They found that the development of commitment is largely a function of the perceived benefits of the relationship (e.g. satisfaction and economic performance).
Dussauge & Garrette	1995	Secondary	They studied the link between international alliance performance and the strategic and organizational features of partners. They found that different types of alliances, characterized by different organizational structures, achieve different levels of performance.

** Although data sets were the authors, they were collected for purpose other than this study

Partly in response to these concerns, Anderson (1990) rationalizes the use of multiple measures of performance by developing a continuum of indicators related to the time duration of alliances. This latter point refers to the condition that some alliances last only a matter of months while others last a number of years. Traditional financial indicators such as profitability and cash flow or output measures situate themselves on the short term end of the continuum. As the time horizon increases, marketing measures (market share and customer satisfaction) become important. As we approach a longer term perspective, intermediate variables (relative product quality and relative price) and learning measures (unfamiliar market, unfamiliar technology) begin to take precedence. Finally, organizational measures, including the degree of harmony among partners, morale, productivity, financial resource indicators, adaptiveness, and innovativeness become paramount at the long term extreme of the continuum. Despite Anderson's (1990) attempted reconciliation, the issue of alliance performance remains problematic for two reasons. First, alliance performance measures should correspond to formation motives (Kogut, 1988). Second, Anderson's (1990) efforts hint at but do not distinguish between the lifecycle components of an alliance. In short, Anderson's (1990) and other existing performance measures examine outcomes but ignore the operational processes of an alliance.

This last point necessitates further explanation. Building on the work of Commons (1950), Ring and Van de Ven (1994) suggest that alliances naturally evolve through different phases. Alliances commence with a negotiations stage where two or more firms:

> "focus on the formal bargaining processes and choice behaviour ....as they select, approach, or avoid alternative parties and as they persuade, argue and haggle over possible terms and procedures of a potential partnership" (Ring & Van de Ven, 1994; 97).

Ventures then move on to a commitment stage where the:

> "terms and governance structures of the relationship are established and are either codified in a formal relational contract or informally understood in a psychological contract among parties" (Ring & Van de Ven, 1994; 98).

Finally, alliances enter into an execution stage where

> "the commitments and rules of action are carried into effect; the parties give orders to their subordinates, buy materials, pay amounts agreed upon, and otherwise administer whatever is needed to execute the agreement" (Ring & Van de Ven, 1994; 98).

From this perspective, alliances require two types of performance measures: those which represent outcomes and those which respond to process. In terms of outcomes, I concur with Kogut (1987) who suggests that outcome measures need to address alliance formation motivations. In this light, alliance outcome objectives or performance should be

conceived in terms of each partner's goals of lowering costs or improving efficiency, enhancing competitive position, and acquiring knowledge.

However, in order to maximize these outcome objectives, a second type of performance needs to be addressed. This second measure refers to the ability of the partners to manage the evolutionary stages (negotiation, commitment, execution) of the alliance. In this regard, the suggestion is that partners will desire (i) high levels of organizational flexibility, (ii) high levels of equitable or fair treatment (Ring & Van de Ven, 1994), and (iii) low levels of transaction costs in order to maximize outcome objectives. The performance of an alliance may be conceptualized as follows in Figure 5:

Figure 5

A MODEL OF STRATEGIC ALLIANCE PERFORMANCE

Alliance Motivations	⇒ ⇒	**Alliance Process**	⇒ ⇒	**Performance Outcomes**
	Negotiation Stage	Commitment Stage	Execution Stage	
Strategic Positioning		Flexibility	?	Profitability
Cost Reduction		Fairness of Treatment	?	Market Share Measures
Knowledge Acquisition or Learning		Transaction Costs	?	Learning Measures
Social Networking			?	Organizational Measures

The examination of why alliances succeed or fail, in other words, requires much more careful attention to these separate dimensions of performance. (This researcher argues in the next chapter that they have to be combined with careful attention to the type of alliance). The present thesis focuses upon measures of *process* performance.

This study is limited to an exploration of process performance for a number of reasons. One reason is that studies of this nature are both time consuming for the researcher and sensitive for the companies involved. Such a limitation necessitates its completion in a reasonable time frame but also increases the probability of obtaining accurate information by not requesting more sensitive financial or market share information.

Linking processual performance with outcome performance is also a big conceptual step, Focusing on the process dimensions allows the groundwork to be laid for such a future endeavour. Finally, outcome performance in an engineering project environment is often inter-related with the external physical, societal, and government/regulatory environments. "Acts of God," and unforeseen societal upheavals such as wars, epidemics, and political revolutions have been known to interfere with the operations and profitability of major capital projects. Any attempts to link process performance with outcome performance would need to take into account these factors. It is, however, beyond the scope of this study.

Thus, the focus of the dissertation is upon how organizations manage the alliance process (in particular, how they use the contract) to secure effective performance. Effective performance of the alliance process is defined in terms of three dimensions: flexibility, transaction costs, and equitable treatment.

A review of the alliance literature reveals few details regarding managerial or *operational flexibility.* For the most part, the concept has not yet been addressed by alliance researchers. The concept of flexibility is however complex and has been the

subject of a substantive body of research, albeit across a wide range of management disciplines including those of finance, economics, decision science, organization theory, administrative science, public policy, and political science (Evans, 1991, Krickert, 1985). A result of this diversity is the evolution of a large number of similar concepts including adaptability, agility, corrigibility, elasticity, hedging, liquidity, malleability, plasticity, pliability, resilience, robustness, and versatility which relate to one another by their reference to either the idea of yielding to pressure, the capacity for new situations, or the susceptibility of modification (Evans, 1991; 75). This diversity of understanding points to a concept whose meaning draws little agreement beyond simple definitions.

One potential reason for this confusion is that the meaning of flexibility may differ according to the context under study (Evans, 1991) and may take on different forms (Krijnen, 1985). Flexibility in a military organization may have little in common with flexibility in a high technology start up, a government ministry or a project based strategic alliance. For the purpose of this dissertation, however, flexibility will refer to the ability "to adjust available means to better achieve current and anticipated future ends" (Evans, 1991: 73). The uncertainties inherent in any major project demand a degree of flexibility both within firms and between partners. Inflexibility throughout the life of an alliance would suggest a state of unhappiness between partners and a reason for not wanting to cooperate on future projects.

The idea that firms prefer *fair or equitable treatment* from others appears again to be a common sense notion (Ring & Van de Ven, 1994) yet nearly all studies of fairness have been undertaken at the workplace and interpersonal level and draw heavily on the psychology and micro-organizational behaviour literatures. Despite the paucity of research regarding the interorganizational dimensions of this construct, portions of the workplace level findings appear important for the management of alliances. As Geringer (1988) notes, overall responsibility for alliance development and execution normally rests

with one to three executives within each firm. These executives in turn interact with their counterparts in partner firms. Thus in a sense, these relationships are interpersonal. As well, much of the research suggests that fairness as an organizational variable may be related to many positive work outcomes (Niehoff & Moorman, 1993). In particular we refer to the concepts of procedural and distributive justice as they apply to reward allocation decisions. Distributive justice is the degree to which rewards are allocated in an equitable manner. Procedural justice is the degree to which those affected by such allocation decisions perceive them to have been made according to fair methods and guidelines (Folger & Greenberg, 1985; Greenberg, 1990b; Niehoff & Moorman, 1993).

In the context of alliances, distributive justice among partners is assumed to be a given. Partner firms are not expected to enter into alliance agreements unless the equitable allocation of rewards (financial) meets their approval and are specified in the contract be it verbal or written. Procedural justice thus represents the subject of interest and fits this study's concern with examining elements which affect the processual dynamics of an alliance. There exists two important components of procedural justice (Greenberg, 1990a). The first component is fair formal procedures, the presence or absence of which are believed to be fundamental to the fair distribution of rewards (Leventhal, 1980). Again, the assumption in context of alliances is that this component is specified in the intra-alliance contract. The second component, interactional justice, is however, pertinent to this study. This term refers to the fairness of the treatment an employee receives in the enactment of formal procedures or in the explanation of those procedures (Bies, 1987; Bies & Moag, 1986; Niehoff & Moorman, 1987).

In terms of partner relations, interactional justice may be defined as the treatment a firm perceives it receives from partners during the execution of a project. Six procedural rules help define the fairness of this treatment (Leventhal, 1980: 197; Leventhal, Karuza, & Fry, 1980), each of which is adapted to an alliance context. The consistency rule refers

to whether a consistent application of standards is undertaken by partners. This requires that resource allocation procedures be the same for different firms and consistent over time. The bias suppression rule refers to the extent of a partner's familiarity with the firm's work. The issue in this sense is whether the partner firm suppresses its own interests and blind allegiances to narrow preconceptions at all points in time. The correctability rule describes whether a firm is provided the opportunity to challenge or rebut a partner's evaluation of its work. It requires the existence of methods for modifying and reversing decisions made at various points during the life of an alliance. The accuracy rule refers to whether a partner makes the effort to solicit input prior to decision making and also uses that information. This dictates that decisions be based on as much accurate information and informed opinion as possible. This rule in turn creates a need for record keeping and effective partner monitoring. The representativeness rule refers to the existence of open lines of communication between partner firms throughout the life of the project. It dictates that all important alliance decisions should take into account the viewpoints of partners affected by those decisions. Finally, the ethicality rule refers to whether a firm perceives itself to have been ethically treated by its partner(s). Although intended to be interpersonal in nature, these six rules provide a means to understand the concept of fairness as it applies to alliance relations.

Transaction costs result from the need to monitor partner behaviour and vary in line with levels of relational risk. Quoting Kenneth Arrow, Williamson (1985: 18) defines transactions costs as the "costs of running the economic system". In the context of project based strategic alliances, these costs are numerous and include travel costs, lawyer's fees, communication charges (phone, fax, courier, mail, or electronic network), and the time, effort, and monetary outlay for negotiations and for preparation and execution of project monitoring (budgets, reporting policies and procedures, statistical reports, performance appraisals). The logic of transaction costs forms an important basis

for the arguments of this dissertation. Simply, a worrisome partner will be monitored more closely thus incurring higher costs. This logic is discussed in more detail, later in this chapter.

Two final issues need to be addressed regarding processual performance. The first issue is which of the three measures take precedence? It is quite reasonable to assume that low transaction costs might not always accompany high levels of operational flexibility and fair treatment or vice-versa. Although no iron clad answer exists, for the purpose of this study, the assumption will be that fair treatment takes precedence. If a choice is to be made whether to collaborate with an existing partner on future projects, higher transaction costs and lower flexibility will probably be excused if a perception of fair treatment is present. However, if the latter aspect is a worry, partners will probably be searched for elsewhere.

The second issue is to formally state a second underlying assumption. In the context of this study, partners are assumed to be technically competent in performing their agreed to tasks. Firms with products and services of inferior quality introduce a different set of concerns into any business relationship. These concerns would normally override any of the performance measures used in this study.

Thus, measures of alliance performance need to address outcome and process concerns. Outcome measures will be most appropriate if they respond to alliance formation motives (efficiency, knowledge acquisition, competitive positioning). However alliance partners also need to appropriately manage the process stages of an alliance. This type of performance is the subject of this dissertation and is conceptually defined by three second level constructs: organizational flexibility, fair treatment, and transaction costs.

Summary

Up to this point an attempt has been made to convey the following: Alliances are an increasingly common phenomena with a well understood set of motivations. Despite their increasingly frequent occurrence, alliances are problematical organizational forms. High failure rates have led a number of scholars to search for reasons why this is so. For the most part however, few empirical studies exist which explicitly test the notion of performance and of those that do, most fail to satisfactorily define performance (in particular, failing to separate process from outcome measures) and/or separate different types of alliances. The present study examines the project based form of joint venture and defines performance in terms of three dimensions - the levels of organizational flexibility which partners are able to attain when managing the negotiations, commitment, and execution stages of the alliance, their perceptions of equitable or fair treatment, and the levels of transaction costs incurred to monitor partner behaviour. The question is "How do partners to an alliance manage relational risk?" Before addressing this question, the concept "relational risk" needs to be explored further.

Relational Risk and Its Determinants

Leading up to this study, exploratory interviews with executives in the engineering consulting industry explored the formation of strategic alliances. More often than not, parts of the discussion revolved around why these firms collaborate. In almost all cases, managers argued that if they could, their firms would undertake the work alone. Alliances as such are seen as a second best alternative to either arm's length markets or integration within a single firm (Gullander, 1976). One executive's comments were indicative of the majority,

> "we collaborate for one of two main reasons. Either, the work is too risky to accomplish alone or the client perceives the risk to be too high to award the work to any one firm."

When queried further, a majority of executives defined risk as a single firm's lack of the requisite size, technology, financial capability, or management skill necessary to undertake a specific project. These may be termed *task related risks.* Strategic alliances allow firms to alleviate these task related risks and remain flexible through the pooling of complementary skills or assets. Overcoming task related risk ties directly to the motivations for alliance formation discussed previously. In an abbreviated manner, task related risks represent the well understood up front potential costs to a firm of using an alliance to achieve its goals of acquiring knowledge, lowering transaction costs, or enhancing competitive position.

The managers interviewed were also fully aware of a second form of risk involved in alliances. This second risk, I propose to call *relational risk* is defined as the uncertainty of partner behaviour, uncertainty resulting from the process or way in which the relationship between the alliance partners is managed. In the context of alliance formation, we argue for the existence of five warning signals or flags of relational risk which we term *structural dimensions.* These are:

i, *experiential* (i.e., whether the partners to an alliance have experiences of alliances, of the specific partners, of the specific client, and the nature of that experience);

ii, *informational due diligence* (i.e., the extent to which the partners each seek appropriate information vis a vis the task and the partners);

iii, *organizational asymmetries* (i.e., where the partners are unequal in their characteristics and the significance of these inequalities);

iv, *geographical proximity*; and

v, *partner dependence* (i.e., the level of dependence of a partner on other firms or partners to complete its contracted portion of the project)

The basic idea is that the greater the occurrence of one or more of these five dimensions the greater the degree of relational risk. As risk rises, the partners to an alliance will seek to "manage" it by contractual specificity.

Experiential Dimension

The first dimension, *experiential*, refers to a firm's previous experience in this type of endeavour, (i.e. has the firm engaged previously in alliances). Six components define this dimension. These include: (1) a firm's **previous experience with alliances** in general; (2) **poor experience with alliances;** (3) **poor experience with specific partners**; (4) **previous experience with a specific client**; (5) **poor experiences (as well as a**

partner's) with a specific client; and (6) the **newness of the task** for the firm or any of its partners.

The first experiential component, previous experience in alliances, refers to the *frequency* with which a firm has previously collaborated with other firms in alliances. In the context of alliances, infrequent participation in alliances represents a lack of knowledge or a high degree of uncertainty on the part of the firm. This affects relational risk in two ways. Consistent with agency theory (Eisenhardt, 1989) such lack of knowledge implies a need to invest in costly monitoring systems to determine the partner's behaviour. Arguably, partner firms will need to pay more attention to the work of the inexperienced partner. The act of establishing extensive monitoring systems should serve to alleviate the risk for the other firms but also increase the potential for distrust. As all firms strive to maximize their autonomy (Reve & Stern, 1979) partners entering into good faith relationships may resent the intrusion of the lead firm into their operations and seek to maintain a high degree of discretion over information disclosure.

Frequency of collaboration also affects relational risk through the resulting divergent interests of alliance partners. Anderson (1990) argues that differing levels of understanding of the alliance process leads to differing partner performance expectations. Differing performance expectations in turn increase the risk of conflict between partners (Anderson, 1990) , potentially lowering interfirm trust. For example, firms which ally infrequently may perceive learning or market entry as appropriate performance goals. On the other hand, more experienced partners may see a particular alliance as simply another revenue generating activity. Combining these two arguments, firms demonstrating a record of frequent use of alliance forms should be perceived as less risky by partners, with the corresponding level of trust being high while the need to invest in costly monitoring systems being low.

Previous poor results in alliances is the second experiential component. The suggestion put forward is that firms whose previous expectations were not met will be wary of participating in other alliances. Common sense dictates that firms are more willing to copy previous successes than past failures. Research suggests that decisions leading to non-preferred states will be less likely to be used again (Cyert & March, 1963).

The third experiential component, previous poor experiences when dealing with specific partners is an obvious reason for relational risk to be high. As noted earlier, responsibility for alliance formation lies with executive level personnel in most firms. As a result, personal relationships or friendships between executives of different firms or membership in a social network (Gulati, 1993) serve as powerful explanations of alliance formation. Leading from this, partner firms where executives are on friendly terms or who have long standing relationships, should exhibit low levels of relational risk. Conversely, situations where executive inter-personal relationships are poor or non-existent should exhibit higher relational risk between partners.

At a more macro level, any firm that has suffered in a past relationship will be wary of dealing with that organization in the future. Given this logic one would suspect that a firm would simply avoid partners of this nature. Yet a number of reasons exist for their possible inclusion in an alliance. First, such a partner may be forced upon the alliance by the client. Second, such a potential partner may have a successful and long standing relationship with the client making it a favourite to be awarded contract work. Third, there exists within many firms in the industry an acceptance of compromise in order to win contracts. One executive's comments were typical of this attitude. Asked if there were any rules of thumb regarding partner selection, he stated "we do whatever it takes to win the contract." Despite, these arguments, firms will still be wary of previously poor performing partners.

The same logic applies to one other experiential component, the selection of partners whose previous experiences with the client are questionable. Although the inclusion of such a partner would seem illogical, alliances performing work for large clients such as governments or government agencies occasionally face this dilemma. One example pertains to a number of firms who recently bid on an international irrigation project funded by an agency of the Canadian government. One partner was simultaneously undertaking a similar project for that federal agency in a different country. The federal agency became increasingly dissatisfied with the partner's work on that ongoing project. This development put in jeopardy the alliance's chances of being awarded the new project. The troublesome partner was subsequently dropped from the alliance.

When contemplating potential partners for project based work, firms will prefer partners that demonstrate a work history with the client. Agency theorists provide an explanation for this by suggesting that when principals and agent's engage in long term relationships, it is likely that the principal (client) will learn about the agent (partner firm) and be able to assess behaviour more readily (Lambert, 1983). Conversely, in short term agency relations, where alliance partners are new to the client, information asymmetry between principal and agent is likely to be greater (Eisenhardt, 1989), thus lessening the client's level of confidence in the behaviour of the partner firm. Although a client will normally pass responsiblity for project work onto the contractor, comments from industry executives suggest that a normal client contractor agreement will include identification of any major subcontractors Partner's with extensive past relations with clients should be advantageous for the alliance as a whole. Inputs from these firms to the formation and operation of the alliance should be competence enhancing and valued by other partners thus lessening the chances of inter-firm conflict.

A lack of experience or newness with a particular type of project can also have detrimental effects (Sitkin & Pablo, 1992). **Newness** may refer to a number of points. The project may be the firm's first in a particular **geographic region**. It may be of greater **magnitude** than previously encountered. It may be the first involving such a large **number of partners** or it may represent the first time that the firm has undertaken a **lead consultant or contractor**. Finally, it may be the first occasion on which a firm has made use of a particular **technology.**

In terms of detrimental effects, managers entering unfamiliar business areas may apply well established procedures and criteria, even if they are largely irrelevant for or counterproductive in the new situation (Jemison & Sitkin, 1986). Further, because experience informs decision makers about information needs, a lack of relevant experience can lead to incorrect assumptions or diagnoses (Sitkin & Pablo, 1992). Partners' dependent upon others for operational performance may either seek in good faith to over-compensate for their efforts to guard against this weakness or behave opportunistically to take advantage of the partner. Having altered the complementary competencies and task expectencies with which the inexperienced partner entered into the alliance, in both cases one would expect a low degree of interfirm trust or perceived relational risk.

Informational Due Diligence

A second dimension of low trust is the extent to which a firm applies *informational due diligence* to the alliance in question. By this is meant how actively and intensely a firm examines the project and its partners. Agency theory argues that principals (lead firm) will always strive to obtain a situation of complete information when monitoring the behaviour of agents (partner firm). However in many instances, incomplete information exists where the principal may not know exactly what the agent is doing (Eisenhardt, 1989). For large firms, an alliance may represent only one of many

similar relationships in which it is engaged. As independent operating entities, partner firms would be expected to guard their competencies and disclose a mimimum of operating information to other firms. A state of incomplete information may be argued to be the normal state of affairs for alliance partners. Given incomplete information, the principal will seek to guard itself against moral hazard (lack of effort on the part of the agent) and adverse selection (misrepresentation of ability by the agent).

When behaviour is unobservable, two options exist for the principal. One is to discover the agent's behaviour by investing in information systems such as budgeting systems, reporting systems, boards of directors and additional layers of management. Such investments reveal the agent's behaviour to the principal and the situation reverts to the complete information case. A second option to reduce the principal's uncertainty is to contract on the results of the agent's behaviour (Eisenhardt, 1989). In the case of engineering alliances, contracts are always outcome based. Simply put, firms are contracted to provide finished products in the form of engineering services. The performance of the services, such as the design of a bridge or the management of a rail construction project represent the contracted results. Accordingly, lead firms are left with the option of investing or not investing in information systems. Firms that invest in information systems or apply due diligence to the project should be more completely informed about the behaviour of partner firms and thus reduce the chances of unexpected surprises. Research supports the assertion that due diligence matters. A number of studies link poor choices made during alliance formation to alliance failure (Fornell, Lorange, & Roos, 1990; Gomes-Casseres, 1987). Firms with in adequate administration of the project should experience higher levels of uncertainty, lowering the levels of inter-firm trust.

Organizational Asymmetries

A third dimension of relational risk is the extent of *organizational asymmetry* between partners. Five related components comprise the term organizational asymmetry. These include: (1) the degree of **strategic fit**; (2) the similarity of **operational style**; (3) the **size disparity** of each firm; (4) the **risk asymmetry** or relative importance of the project for each partner and (5) each firms **awareness** of the **potential** for **surprise**. The argument is simple. Firms that perceive potential partners to be similar to themselves will find it easier to trust each other (Jarillo, 1988; Powell, 1990). Firms that see themselves as dissimilar will be wary of each other thus lowering the levels of trust (Harrigan, 1987, 1990; Powell, 1990;), impeding implementation (Datta, 1988) and reducing the likelihood of a long term agreement (Powell, 1987). Indeed empirical (Tomlinson & Thompson, 1977; Geringer, 1988) and conceptual (Porter & Fuller, 1986) evidence suggests that corporate similarity is a basis for partner selection for some alliances. A caveat is added to this argument by suggesting that firms which do not take into account possible discrepancies in similarities will be less trusting in the event of such occurrences.

Building on the work of Jemison and Sitkin (1986: 146), strategic fit is defined as the degree to which a partner augments or complements the lead firm's strategy and thus makes identifiable contributions to the financial and non financial goals of the parent. Based on the logic which we have built up to this point, a strategic fit between partners should be necessary for any alliance formation. Yet in certain cases, partners are forced upon the alliance or are chosen simply for their geographical location or political connections (Tomlinson, 1970; Geringer, 1988).

An example of a forced, geographically based partnership involves the design and engineering of the Alberta Energy Company's ALPAC forestry mill in Northern Alberta. Completed in the early 1990's, the mill represented an attempt by the Alberta government to foster development of the provincial forestry sector. Although privately run and financed, the government held considerable sway over the project development due to its

licensing power. It used its influence to ensure a high content of Alberta manpower was included in both the operation, construction and engineering of the mill. The government however, faced a dilemma in that no Alberta based engineering firm possessed the requisite capabilities and technology to design a state of the art mill. The obvious candidates to perform the task were all domiciled in the neighbouring province of British Columbia. One in particular, H.A. Simons Inc. was the favourite. Stanley Engineering Inc. a major Alberta based engineering firm was aware of this preference, and approached H.A. Simons in regards to a potential joint venture. Knowing that without a strong degree of Alberta content, it might not be awarded the contract, and having received informal signals to that effect from the Alberta government, H.A. Simons agreed to the joint venture and won the contract.

Despite this success, in many of these situations, partner firm strategies may be blatantly at odds with each other suggesting the veracity of Reve and Stern's (1979) arguments that differences of this nature are the primary causes of low interorganizational trust. In these cases, we would expect trust levels to be lower than if all partners exhibited a high degree of strategic fit.

Alliance partner firms also concern themselves with the similarity of their operational styles defined as the match between administrative practices, cultural practices, and personnel characteristics of the (partner) firms (Jemison & Sitkin, 1986: 147). During the exploratory interviews, a number of executives made mention of this issue as a reason why their firm did not work with certain other firms. One manager stated bluntly,

> "there are very few firms that we will work with. We have gone through the list of potential partners and have crossed off most of them because we don't trust them...they have different work cultures, ethics."

Conceptually a number of studies echo the concern of this manager by linking operational similarity to alliance success (Phillips, 1960; Porter & Fuller, 1986; Jarillo, 1988; Powell, 1990). Empirically, research suggests that ventures last longer (Harrigan, 1987) and cooperation is more effective (Geringer, 1988) between partners exhibiting similar cultures and operating policies. Conversely, alliance failures are linked to significant differences in style (Dymsza, 1987; Datta, 1988) suggesting the potential for low trust between alliance partners.

A related asymmetry component is the size disparity of partner firms. Research suggests that larger firms are more powerful than their smaller partners (Harrigan, 1987). Trust, however, increases with homogeneity. Size represents one means by which such homogeneity or similarity is measured. When the diversity of participants increases, trust recedes and so does the willingness to maintain long term relationships (Powell, 1990). Empirically, Bleeke & Ernst (1991) suggest that alliances between weak and strong companies rarely work. The suggestion is that firms of dissimilar sizes will be suspicious of the motivations and capabilities of partner firms.

For instance, where a significantly smaller firm represents the technology component of an alliance, a fair assumption is that its decisions makers will be guarded in protecting the firm's technology and be suspicious that the alliance formation motivations of the larger firm involve learning as well as simple revenue enhancement. Reversing the roles, one would suspect that the larger firm may doubt the capabilities of its partner when the alliance is undertaken for especially large or novel projects.

Research corroborates this logic suggesting that alliances involving partners of similar asset sizes last longer (Harrigan, 1987), are more effective (Geringer, 1988; Powell, 1990) and that alliances of dissimilar sizes are less successful (Killing, 1987; Bleeke & Ernst, 1991) although Kogut, (1987) disputes this last point. The expectation is that the potential for conflict will be higher in alliances of dissimilar sized firms.

A further component relates to the relative willingness of partners to undertake the necessary actions to successfully complete the project to the satisfaction of the client and lead contractor. A number of factors affect this risk. One is relative importance of the alliance to each partner firm. Where the risk of partaking in the alliance is not equally balanced for all member firms, we expect that those with higher relative levels of resource commitment will exhibit higher levels of concern and seek to guard against **moral hazard** on the part of its partners. This state of concern along with efforts by the principal (lead) firm to invest in monitoring systems will serve to decrease the level of trust within the alliance. A second is the relative financial health of the partners. A partner close to bankruptcy or who lacks deep pockets may not be as willing to meet the goals of the alliance as a healthier partner would.

One final concept which serves to qualify the similarity dimension is the notion of surprise. This strategy related idea has its own antecedents in military strategy which extends back to principles enunciated by Julius Caesar and Alexander the Great (Varner & Alger, 1978) and beyond to Sun Tsu's classic treatise written around 300 BC (Wing, 1988). In such contexts, one key to winning was to surprise opponents. Business strategists have (through the influence of industrial economics) historically sought to protect firms from competition and surprise by erecting industry wide barriers to entry (Porter, 1980) and more recently (through insights from the resource based theory of the firm) by erecting isolating mechanisms or barriers to imitation (Rumelt, 1984). Although powerful explanations for competitive behaviour, neither of these two notions takes into account cooperative behaviour by firms. Nevertheless, both raise the issue of a firm's awareness and preparation for partner deviations from expected behaviour. As a result of proven track records, solid reputations for interfirm collaboration, or extensive experience working with particular partners, firms may be too trusting. Despite many similiarities, the fact that firms are different independent organizational entities in their own right, is

itself a potential reason for opportunistic behaviour (Murray & Siehl, 1989). Firms demonstrating a degree of naivete by being surprised by a partner's unexpected behaviour should be more trusting prior to the discovery than firms which prepare themselves for surprises.

Geographic Proximity

The fourth dimension involves the *geographical proximity* of the firms to each other. That is, how closely located are the headquarters or operationally relevant (project) offices of each firm. The importance of this dimension relates to the need for each firm to maintain a degree of control over the joint venture.

Two means exist to make this argument. First, an assumption is that any firm entering an alliance will monitor its efforts through the use of an impersonal management control system. Such a system includes a budget, statistical reports, policies and procedures, and performance appraisals for affected personnel. However, planning and measurement (strategic) functions of management control systems receive more attention than the corrective action and coordination (operational) functions (Daft & Macintosh, 1984). Tied to alliances, this suggests that partners may be very proficient at planning and setting up these linkages but less efficient at operating them. Operational concerns are, however, important for this paper because they require different control devices than the impersonal ones mentioned above (Daft & Macintosh, 1984). Within organizations, if coordination is difficult and tasks uncertain, face to face coordination is required (Thompson, 1967; Van de Ven, Delbecq, and Koenig, 1976). In this respect, efforts of middle managers to change behaviour depend on networking and personal communications transmitted outside formal control systems (Daft & Macintosh, 1984, Hakansson & Johanson, 1987). This suggests that much of the adaptability of alliance relationships or the ability of partners to resolve issues of conflict revolves around the

ability of key decision makers in partner firms to meet face to face when problems arise. Geographical proximity represents an impediment to this adaptibility (Doz, 1987) or an antecedent of low trust when the two firms are located far apart. Second, and following from previous assertions regarding the propensity of frequent interactions to increase friendship and trust, key decision makers will be wary of entering alliances with geographically dispersed partners. Logically in these cases, decision makers will meet less frequently than in other alliances and will, as a result, have less reason to expect the development over time of a high trust relationship.

Partner Dependence

The last dimension refers to the *dependence of a partner* on other firms to complete its portion of the project. Regardless of whether the partner is contractually responsible for the third party's efforts, a prime consultant now has one more serious issue to be concerned with. Further, it is still ultimately responsible for completion of the work in the eyes of the client. Stated more formally, the inclusion of third parties serves to increase the uncertainty of a partner's behaviour thus increasing the level of relational risk.

To summarize, firms alleviate task related risks by forming alliances but in doing so incur relational risks. This study suggests that relational risk is a function of five main dimensions: (1) the extent of previous experience in dealing with alliances, partners, and clients, and with the task; (2) the extent to which partners apply informational due dillgence to the alliance in question; (3) the degree of organizational asymmetry between partners; (4) the geographical proximity of partner firms; and (5) the dependence of a partner on other firms to complete its portion of the work. Relational risk and its dimensions is in itself an important topic. Yet perhaps of even more importance is the issue of how alliance participants manage this risk. This issue is dealt with next.

The Management of Relational Risk

In exploratory interviews, it was suggested by one manager that the perceived potential for conflict between the alliance partners (or, put another way, the potential for distrust between firms) will determine how specific the contractual terms are between each partner. One vice president of international projects continued,

> "Because we compete and cooperate off and on with the same firms, we would prefer to use gentleman's agreements to conduct affairs. We like to stick to what we do best...engineering. But often we are forced to bring in the lawyers simply to keep the other guy (firm) in line or because we don't know much about him".

This quote typifies a preference of managers not to formulate highly specific contractual agreements because it is recognized that higher contractual specificity frequently entails higher *transaction costs* in the form of higher lawyer fees, higher outlays for drafting, negotiating, maintaining and enforcing contingent claims contracts (Parkhe, 1993), longer time frames for formation, and potential messy divorces when needed. In an industry where bidding alliances can change over night, the speed of alliance formation and the timing of a bid can make or break the chances for obtaining a contract. Thus many firms seek to minimize transaction costs and maintain simple relationships at least until the point where the contract is won. Linked to this, however, and potentially of greater significance is that higher contractual specificity entails lower *operational flexibility*. Although organizations may seek to protect themselves contractually, safeguards built into the contract may handicap the ability of the joint venture organization to respond to changing environmental circumstances. In short, the firms surveyed in the

exploratory interviews reported that they undertook alliances in order to maintain flexibility, but while doing so, recognized the need to protect themselves contractually from the possibility of partner's cheating on them.

The idea of relational risk (i.e. the threat of cheating partners) is derived from agency theory and transaction cost economics. Three specific forms are defined: *opportunism* (self-interested partner behaviour with guile), *moral hazard* (lack of effort by the partner), and *adverse* selection (misrepresentation of ability by the partner). The term "perceived" is used when referring to relational risk because "decision makers assessments of inherent risks" (Sitkin & Pablo, 1992) are made before the fact, during alliance formation.

Central to this explanation is the difficulty of writing and enforcing contracts under uncertainty (Williamson, 1975, 1985). Transaction cost theory is based on two behavioural assumptions. The first assumption is that actors are boundedly rational, that is `intendedly rational but only limitedly so' (Simon, 1961). The second assumption is that actors are opportunistic - they pursue self interest with guile (Williamson, 1975). In addition to these assumptions, three conditions must be present before a firm will prefer internalizing a transaction over contracting for the transaction. These three conditions are: (1) a high level of uncertainty must surround the transaction, (2) assets involved in the transaction must be highly specialized to the transaction, and (3) the transaction must occur frequently (Williamson, 1985).

The logic of transaction cost economics can thus be summarized as follows. A high level of uncertainty regarding future outcomes makes it extremely costly, if not impossible, to write and enforce a contract that specifies all possible future conditions. Designing a complete contract is further hampered by the bounded rationality of the actors involved: but, with an incomplete contract the actors in the contract cannot be trusted to remain true to their originally declared intent; instead, they will act opportunistically and

exploit any gaps in the contract. If the contract involves a high level of assets specialized to the contractual relationship, the difference between the value of these assets, when employed in their present activities and their value in the next best use represents a sunk cost if the other firm walks away from the contract. The first firm, therefore, becomes locked in, and bears the transaction costs resulting from its partner's opportunistic behaviour. These costs will be greater when the transaction is frequent. When a transaction involves high levels of specialized assets, is highly uncertain, and is frequent, the transaction costs associated with contracting will be high enough to dictate internalization. On the other hand, when transactions occur infrequently, involve highly certain outcomes and do not involve specialized assets, the market will be a more efficient means of lowering transaction costs (Mosakowski, 1991).

Recently, scholars have extended the transaction cost logic beyond the simpler markets and hierarchies dichotomy to include hybrid forms of organization (Powell, 1987; Hennart, 1988; Kogut, 1988). According to this perspective, firms choose to transact with one another according to the sum of production (or service) and transaction costs (Williamson, 1975). "A necessary condition for firms to joint venture is that the production (or service) cost achieved through internal development or acquisition is significantly higher than external sourcing for at least one of the partners" (Kogut, 1988: 320). According to a transaction cost perspective, therefore, the critical dimension of a joint venture is its resolution of uncertainty over the behaviour of the contracting parties. Furthermore, when the assets of one or both of the parties are specialized to the transaction, the hazards of joint cooperation are outweighed by the higher production or acquisition costs of 100 percent ownership (Kogut, 1988).

Complementing these insights, Ring and Van de Ven (1992) argue that the market-hierarchy dichotomy does not adequately explain the governance structures of hybrid forms of organization. These authors view market based transactions as involving low

reliance on trust and risk between parties. Hierachies, on the other hand involve low reliance on inter-firm trust but high levels of inter-firm risk. Hybrid types of cooperative relationships demonstrate, however, high reliance on trust between parties. Ring & Van De Ven's (1992) contribution is to describe two other forms of governance alternatives.

According to these authors, recurrent contracts are used when a low level of risk and a high reliance on trust exists between cooperating firms. This form of contract involves repeated or episodic exchanges of assets that have moderate degrees of transaction specificity. The terms of these exchanges tend to be certain but some contingencies are left to future resolution. Temporally, the duration of these contracts is short or medium term with the parties seeing themselves as autonomous, legally equal, but contemplating a more embedded relationship (Ring & Van De Ven, 1992: 487). Within recurrent contracts, disputes are settled by norms of equity and reciprocity as well as references to societal legal systems.

According to Ring and Van de Ven (1994), a recurrent contract represents a stepping stone leading to a relational form of cooperation. Hybrid arrangements, where parties are relatively unknown to each other, would make use of recurrent contracts. An example involves two engineering firms, Stanley Engineering Inc. and H.A. Simons Inc. Both firms wished to joint venture to design and construct a forestry plant in Northern Alberta. Both firms were, however, new to each other and wished to work together prior to the formation of the alliance. Fully expecting to joint venture in the future, but unsure if such an arrangement would work, the two firms agreed to jointly pursue a number of small scale pilot projects using recurrent contracts prior to tackling the forestry plant.

Relational contracts tend to involve long term investments that stem from groundwork laid by recurrent bargaining on the production and transfer of property rights among legally and equally auonomous parties. The property, products or services jointly developed and exchanged in these transactions entail highly specific investments in

ventures that cannot be fully specified or controlled by the parties in advance of their execution. As a result of high levels of risk and a high reliance on trust, disputes are resolved through internal (bilateral governance) mechanisms designed to preserve the relationship and insure that both the efficiency and equity outcomes sought in the long term relationship are realized (Ring & Van De Ven, 1992: 487).

A research and development consortium represents a probable location for the use of relational contracts. Long term in duration, stakeholders of such ventures are often unsure as to the makeup of the expected product or service and may be guided by vague objectives. Involving close cooperation and repeated exchanges of technical data and expertise over time, close relations between operating personnel often result allowing for the resolution of conflict through discussion and bargaining as opposed to legal remedies.

From a transaction cost point of view, alliances generate two main dysfunctional consequences (Bresser & Harl, 1986; Gray & Yan, 1991) or instabilities. First, operational or strategic inflexibility may be created by contractual interconnections among joint venture partners (Thompson & Strickland, 1983; Ansoff, 1984). Second, contractual interconnections may increase partner vulnerability through the creation of more channels to the environment (Pfeffer & Salancik, 1978; Aldrich, 1979). In other words, the technological, financial, or management pressures facing one partner may impact on the performance of another due to the contractual relation. Despite these drawbacks, important for this study is the idea that firms entering alliances pay specific attention to relational problems such as opportunistic behaviour by partners.

A transaction cost logic is however an incomplete descriptor of project based joint ventures. First, such a perspective assumes that each firm's assets can be specialized to the transaction or the alliance. This is not the case in engineering consulting as no two projects are ever the same and a typical firm may participate in alliance bidding in a wide variety of areas related to its competencies. Further, transaction cost economics is

primarily a model of long term contracting (Rousseau & Parks, 1993) unlike the short term project variety found in this industry. Indeed, a transaction cost logic suggests that partners facing high levels of risk and dependent upon high levels of trust will evolve towards relational contracting in order to manage the relationship (Ring & Van De Ven: 1992, 1994).

Yet, as a result of the short term and finite nature of engineering projects, the argument is that engineering firms will make use of recurrent forms of contracting when undertaking project specific strategic alliances. This differs with Ring and Van de Ven (1992) in the belief that this form of contracting is not solely used in situations of low risk. An understanding of the engineering industry clarifies why recurrent contracts are more common than relational contracts. For example one executive noted, "When pursuing project work we do whatever it takes to win the contract." In many cases, this includes taking on partners because of their local political connections, their previous work experience with the client, their geographical location in the foreign target market, and/or the demand of the project financier or host nation. As a result, relations between partners are often undeveloped. Indeed, it is not a rare case where the partners have never previously worked together. Added to this, projects often entail the coordination of multiple partners, each with their own unique cultures and work styles. Finally, project alliances normally perform work for clients who pay particular attention to quality of design, workmanship, and warranty concerns. In order to protect themselves, most clients will include major alliance partners in the legal document. Few alliance partners will seek to be solely responsible for the workmanship of other partners on high risk major capital projects and will thus protect themselves through recurrent as opposed to relational forms of contracting.

A second perspective which provides complementary insights as to how alliance partners may protect themselves from relational risk is agency theory. Using the metaphor

of the contract, agency theory addresses the agency issue in which one party (the principal) delegates work to another (the agent), who performs that work (Jensen & Meckling, 1976). Agency theory is concerned with resolving two problems that can occur in agency relationships. The first is the agency problem that arises when (a) the desires or goals of the principal and agent conflict and (b) it is difficult or expensive for the principal to verify what the agent is actually doing. The problem here is that the principal cannot verify that the agent has behaved appropriately. The second is the problem of risk sharing that arises when the principal and the agent may prefer different actions because of the different risk preferences.

Agency theory is comprised of two complementary streams of thinking. Positivist agency theorists attempt to identify various contract alternatives by addressing situations of conflicting goals between agents and principals and seeking to describe governance mechanisms that limit an agent's self-serving behaviour. According to Eisenhardt (1989) the agency problem is solved through the use of outcome based contracts and information monitoring systems.

Principal-agent theory seeks to determine the optimal or most efficient contract under varying levels of outcome uncertainty, risk aversion, information and other variables. Essentially, the question asked is whether behaviour oriented contracts (e.g. hierarchical governance) are more efficient than outcome-oriented contracts (e.g transfer of property rights, market governance)(Eisenhardt, 1989). Under principal-agent theory, principals either have complete or incomplete information regarding agents. When information is complete, principals will make use of behavioural contracts to monitor agents. When information is incomplete, principals must deal with the agency problem because of the fear of opportunistic behaviour in the form of moral hazard (lack of effort) or adverse selection (misrepresentation of ability) on the part of the agents. In this situation, principals are theorized to have the options of monitoring agents through

hierarchy related investments in information systems (such as budgeting systems, reporting procedures, boards of directors, separate layers of management) or market related contracts based on the outcomes of agent's behaviour. This latter option in turn serves to transfer risk to the agent.

Agency theory is not normally associated with the relationship between alliance partners. Indeed, it offers a choice between market and hierarchy. Yet, a means to `fit' the theory's concepts to cooperative relationships is to view each alliance partner as both an agent (in the eyes of other partners) and a principal (from its own vantage point). Participation in an alliance necessarily entails the contribution and subsequent loss of control of some measure of a firm's own organizational resources as well the sharing and increase of control of some measure of its partners resources. Faced with varying degrees of project uncertainty, an alliance participant, such as a lead contractor, will seek to protect its own resources through the use of outcome based contracts and investments in information monitoring systems.

Agency theory offers two main implications for alliance members. First, risk will increase due to the fear of opportunistic behaviour on the part of partners. In this case, perceived opportunism is dealt with by prealliance contracts in which numerous contingencies are recognized with appropriate adaptations stipulated for each (Parke, 1993: 804). The second implication is that a partner (sub-contractor) will have risk transferred to itself through the lead firm's use of outcome based, performance ensuring contracts and intrusions upon its autonomy by the lead firm's use of information monitoring systems. Thus, the second point is that counter to principal agent theory which argues for the necessity of choice between behaviour and outcome based contracts (Eisenhardt, 1989), the use of contracts to control short term alliances will involve the use of both forms of contract. However, consistent with Eisenhardt's (1989) logic, when relational risk is high, outcome uncertainty will be high, and highly specific behavioural

contracts, with their focus on information monitoring systems will predominate. When relational risk is low, outcome uncertainty should be low allowing the use of less specific, outcome oriented contracts. These implications suggest that firms will form hybrid organizations composed of a mix of market and hierarchy and seek to share risks and protect themselves through the attainment of the most efficient and complete contractual arrangement (Eisenhardt, 1989). This in turn should allow the reduction of opportunism through the increased likelihood of detection and increased magnitudes of penalties (Rousseau & Parks, 1993) or prospective punishments after the fact. *As a result, contractual specificity should increase as relational risk to the principal increases.* Stated in another way, contract specificity is used to reduce relational risk.

The Question of Multi Firm Alliances

The flavour of arguments up to this point has suggested the applicability of this study to one on one firm relationships. However, exploratory interviews also served to illuminate another important issue. These executives suggested that in terms of the management of relational risk, few differences existed betwen single sub-contractor relationships and multi sub-contractor relationships from the point of view of the contractor. The reason they gave was that sub- contractors are normally contracted with on an individual basis regardless of whether the accomplishment of partner tasks was dependent on input from other firms or sub-contractors. Such interdepencies are, according to one executive, easily accommodated within the scope of each individual contract. This suggests that lead firms manage multi-firm alliances by segmenting individual partners' responsiblities.

A number of anectdotal and theoretical arguments support such an assertion. From a managerial perspective, most partner firms are autonomous. In order to protect themselves, they will demand individualized contracts. Second, as with clients,

contractors will normally prefer single sources of accountability in case of warranty concerns, inferior performance, or unforeseen contingencies. Finally, other comments suggest that firms' operating in this form of alliance will prefer to be as close to the source of revenue or payment as possible. Contractual linkages with a partner other than the prime contractor represent a potential barrier to payment from the point of view of the sub-contractor.

Theoretical arguments also justify the use of individualized contracts in multi-firm alliances. Applied to this context, a resource dependence approach (Pfeffer & Salancik, 1978; Pfeffer, 1982) suggests that a prime contractor will seek to minimize uncertainty by maximizing the dependence of its partners on itself as well as minimizing its own dependence on its partners. As the source of payment for each sub-contractor, a divide and conquer approach decreases each partner's ability to legally justify inferior performance, and helps to focus each partner's resources on satisfying the concerns of the lead firm. This in turn strengthens the lead firm's position in pursuing the partner should the client not be satisfied with its (the sub-contractor) portion of the work.

Mintzberg's (1983) work on organizational design provides a second theoretical justification. Although placed in the context of individual autonomous organizations, his arguments are useful for understanding this form of alliance. Mintzberg (1983) suggests the existence of two summary bases for grouping work units, market and functional. Partners in this form of alliance appear to to fit a market grouping as they are normally included because of a service which they provide or a product which they manufacture. Mintzberg (1983) provides a description of such an arrangement.

> "In the market based grouping, the members of a single unit have a sense of territoral integrity. They control a well defined organizational process; most of the problems which arise in the course of work can be

> solved simply through mutual adjustment; and many of the rest, which must be referred up the hierarchy, can still be handled within the unit, by that single manager in charge of the work flow" (Mintzberg, 1983; p. 61)

Such a description appears to fit both the operation of a single sub-contractor's work and (from the point of view of the prime contractor) and the operation of the alliance as a whole (from the client's viewpoint). Thompson (1967), also provides support for our contention. Consistent with the logic of individualized contracts, Thompson (1967) suggests that within such an organization relationships will be designed as follows.

> "The basic units are formed to handle reciprocal interdependence, if any. If there is none, then the basic units are shaped according to sequential interdependence, if any. If neither of these more complicated types exist, the basic units are shaped according to common processes, (to facilitate the handling) of pooled interdependence" (Thompson, 1967; 59).

In short, this logic suggests that in the context of contractor sub-contractor relationships, the responsibility for the management of inter-partner task dependencies will rest at the level of the sub-contractor(s) and not the prime contractor.

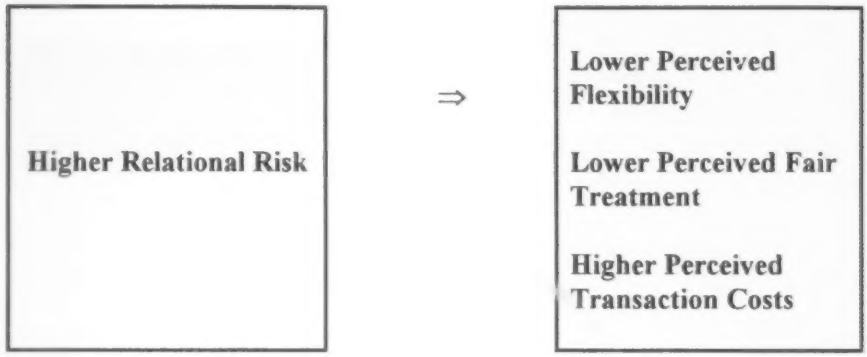
Returning to the original point, by contracting individually with sub-contractors, prime contractors are able to transfer part of the overall financial risk and simplify the management of relational risk. Although few studies exist which examine the management of multi-firm alliances (Lowendahl, 1992), understanding how individual partners are managed allows for an understanding of multi-partner situations.

Hypotheses

At this juncture, it is worth recalling the basic model set out in Chapter 1. The first argument is that perceived alliance performance (conceptualized in terms of transaction costs, flexibility, and fair treatment) decreases with increasing levels of relational risk. Stated more formally, the higher the relational risk between partners, the higher the transaction costs, the lower the degree of operational flexibility and the poorer the perception of fair treatment. When partners are wary of each other, they will invest accordingly in monitoring devices and focus increased management attention on each other thus increasing transaction costs. By being wary of each other, managerial sensitivities toward self serving behaviour will be higher, thus increasing the perceptions of poor treatment. Furthermore, by being fearful of partners, firms will need to be more guarded in their own behaviour and what information they share, thus decreasing the chances of joint initiatives or operational flexibility. The suggestion is that these relationships will hold from the point of view of both partners. Figure 6 outlines these hypothesized relationships.

Figure 6

THE HYPOTHESIZED RELATIONSHIP BETWEEN OPERATIONAL PERFORMANCE AND RELATIONAL RISK



This leads to the first set of hypotheses:

H1a: *The higher the perceived relational risk the lower the perception of operational flexibility among alliance partners.*

H1b: *The higher the perceived relational risk the lower the perception of fair treatment among alliance partners.*

H1c: *The higher the perceived relational risk the higher the transaction costs among alliance partners.*

The second argument of this dissertation is a test of agency theory as applied to strategic alliances. As noted above, if the assumption is correct (that inter-firm alliance contracts are composed of both behavioural and outcome oriented dimensions), then it is possible to identify what is meant by an appropriately specified contract. These

two dimensions may be understood further by classifying them within the domain of a managerially relevant contract. Managerially relevant contracts (Ring & Van de Ven, 1992) or alliance agreements contain five main components. These include (1) **duration**, i.e., the length of time during which the parties are committed to a transaction; (2) **control**, i.e., the structures and procedures for allocating authority and responsibility between partners; (3) **returns**, i.e., the expected rewards and outcomes given the asset commitments made by each partner; (4) **risk**, i.e., the level and nature of the risks accepted or imposed upon transacting partners by their inability to control the future (Klein, 1982; Ring & Van de Ven, 1992); and (5) **termination**, i.e., the events and procedures which allow parties to exit from a transaction.

At first glance, many professional managers might scoff at the suggestion that their contracts are inappropriately specified. Yet there exist two reasons to suggest why this might be so. First, alliance agreements are normally negotiated by executive, not operational level personnel (Geringer, 1988). Those who must deal with day to day operations do not normally set their constraints. Second, many negotiators do not spend the necessary time to hammer out the cooperative details, believing that things will work themselves out after a principal agreement has been reached (Jemison & Sitkin, 1986; Niederkofler, 1986).

At least two means exist to determine the theoretical appropriateness of a contract. One means is to break the contract down into components and classify each according to whether it has a behavioural or outcome focus. A content analysis of each contract might indicate such an emphasis. A second means adopted by this researcher, is simply to determine the relative tightness or looseness of the contract as a whole.

Thus, in line with principal agency theory, contracts will be appropriate when low levels of relational risk or low outcome uncertainty are accompanied by looser contracts . On the other hand, high levels of outcome uncertainty or relational risk should be accompanied by tighter contracts. Figure 7 outlines this hypothesized relationship.

Figure 7
THE HYPOTHESIZED RELATIONSHIP BETWEEN RELATIONAL RISK CONTRACT SPECIFICITY

This leads to the second hypothesis.

H2: *The higher the perceived relational risk the higher the contractual specificity among alliance partners.*

The third argument of this dissertation is that an appropriate level of inter-firm contractual specificity serves as a mechanism to manage relational risk and increase alliance performance in terms of transaction costs, flexibility, and fair treatment. This argument implies a direct link between contractual specificity and the three second order performance concepts. Figure 8 positions these hypothesized relationship. Those in the shaded quadrants are specifically tested in this dissertation. Those in the non-shaded quadrants are discussed further on and incorporated in the Chapter 4.

Figure 8

THE HYPOTHESIZED INTERACTION OF OPERATIONAL PERFORMANCE , WITH RELATIONAL RISK AND CONTRACT SPECIFICITY

Contract Specificity / *Relational Risk*	**High**	**Low**
High	**Higher Perceived Fair Treatment** **Lower Perceived Flexibility** **Higher Perceived Transaction Costs** (Hypotheses H3a-H3f)	**Lower Perceived Fair Treatment** **Higher Perceived Flexibility** **Lower Perceived Transaction Costs**
Low	**Lower Perceived Fair Treatment** **Lower Perceived Flexibility** **Higher Perceived Transaction Costs**	**Higher Perceived Fair Treatment** **Higher Perceived Flexibility** **Lower Perceived Transaction Costs** (Hypotheses H3d-H3f)

Figure 8 highlights processual performance scenarios given different combinations of relational risk and contract specificity. The performance relationships are however, not all similar in nature. In the case of higher relational risk, an appropriately specified contract (tight - behaviourally oriented) would suggest higher transaction costs and lower perceived levels of flexibility (see Quadrant A). Overall performance would be positive as perceptions of fair treatment should be high thus increasing the chances of future and repeat cooperation between partners. The following reasoning allows a favourable impression of this scenario.

By participating in an alliance, each partner cedes a degree of control over a portion of its organizational resources (its autonomy) to the alliance as a whole. This presents a paradox.

> "To focus and coordinate the partner's efforts, the agreement should be as specific as possible. At the same time, it should not overly constrain the partner's competitive maneuverability, since change is an unavoidable reality of cooperative relationships" (Niederkofler, 1991: 251).

This quote expresses the underlying dilemma of any contractual agreement. Contracts have benefits and costs. Although by definition, a contract imposes a degree of structure or rigidity on an alliance relationship, by protecting itself against opportunistic partner behaviour, an appropriately specified contract serves to increase a firm's perception of equitable treatment by a partner as well as increasing the perception of operational flexibility beyond what might normally be expected given the worrisome nature of the relationship. In short, the potential harm a highly specific contract poses to a firm's operational flexibility is less than that posed by an opportunistic partner. Further, although high for this project, should a goal of the partner's be future cooperation, such a level of transaction costs can be thought of as an up front investment, a necessary sunk cost in the long term.

Returning to the performance scenarios, an inappropriately specified contract (loose-outcome oriented) in a higher relational risk situation (see Quadrant B), would suggest the exact opposite of the above scenario. Higher levels of operational flexibility should accompany somewhat lower levels of transaction costs brought on by the lack of enforcement safeguards in the alliance contract. However, this lack of protection only

increases the chances of opportunistic behaviour by a partner, hence lowering perceptions of fair treatment.

On the other hand, when relational risk is lower, an appropriately specified contract (loose-outcome oriented) should enhance chances of future cooperation by correlating positively with lower transaction costs, higher levels of operational flexibility, and a positive perception of fair treatment (See Quadrant C).

Finally, in a situation of lower relational risk, an inappropriately specified contract (tight-behaviour oriented) should correlate positively with lower flexibility, as well as higher and unnecessary transaction costs from partner monitoring. However the added protection of a highly specified contract should actually increase the awareness of fair treatment by a partner.

This leads to the third set of hypotheses of this dissertation:

H3a: *Transaction costs will be higher when higher contractual specificity accompanies situations of higher perceived relational risk*

H3b: *Fair treatment will be higher when higher contractual specificity accompanies situations of higher perceived relational risk.*

H3c *Operational flexibility will be lower when higher contractual specificity accompanies situations of higher perceived relational risk.*

H3d: *Transaction costs will be lower when lower contractual specificity accompanies situations of lower perceived relational risk.*

H3e: *Fair treatment will be higher when lower contractual specificity accompanies situations of lower perceived relational risk.*

H3f: *Operational flexibility will be higher when lower contractual specificity accompanies situations of lower perceived relational risk.*

The fourth and final set of hypotheses relate to the warning signals or flags of relational risk. Previously, relational risk was defined as the degree of partner behaviour uncertainty resulting from the process or way in which the relationship between alliance partners is managed. In the context of alliance formation, the argument is for the existence of five warning signals or flags of relational risk which we term structural dimensions. In summary these are: a firm's client and partner experiences in alliances; the extent to which a firm has practiced due diligence in regards to partner and project selection; the extent of organizational asymmetries between partners; the geographical proximity of one partner to another; and the awareness of a partner's dependence on other firms to successfully complete its contracted portion of the project. Figure 9 summarizes these warning signals and their hypothesized relationships with relational risk.

Figure 9

THE HYPOTHESIZED WARNING SIGNALS OF RELATIONAL RISK

Increased Experience	**Decreases**	⇒	
Increased Due Diligence	**Decreases**	⇒	
Higher Organizational Asymmetry	**Increases**	⇒	**Relational Risk**
Closer Geographic Proximity	**Decreases**	⇒	
Increased Partner Dependence	**Increases**	⇒	

This leads to the fourth and final set of hypotheses:

H4a: *The greater the experience of a firm, the lower the perception of relational risk among alliance partners.*

H4b: *The higher the due diligence, the lower the perception of relational risk among alliance partners.*

H4c: *The higher the organizational asymmetry, the higher the perception of relational risk among alliance partners.*

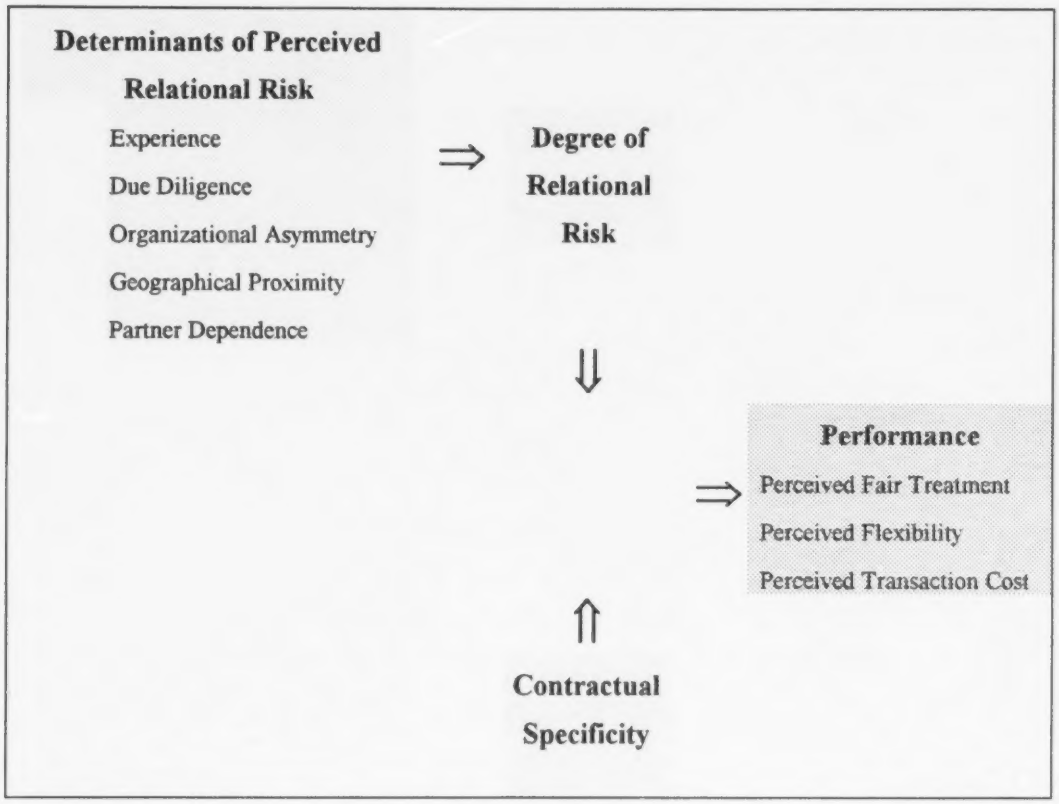
H4d: *The greater the geographical proximity, the lower the perception of relational risk among alliance partners.*

H4e: *The greater the dependence of a partner on other firms, the higher the perception of relational risk among alliance partners.*

This concludes discussion of the theoretical framework. Figure 10, below, illustrates the main ideas of this study. Chapter 3 discusses the methodology needed to test these hypotheses.

Figure 10

AN OVERVIEW OF THE THEORETICAL FRAMEWORK



Chapter 3

METHODOLOGY

The purpose of this chapter is to discuss the methodological approach used in this dissertation. This chapter is broken down into the following parts. First, the research site is specified with reasons for its inclusion provided. Second, the sample and sampling methodology is discussed. Third, the proposed methodological strategy is highlighted, outlining the development of concepts and hypotheses, the development and pilot testing of measures, the major fieldwork to be undertaken, and finally, the form of data analysis to be used.

Research Site

The research site of this dissertation was the professional service firm operating within the consulting engineering industry of Alberta. Originally established to service a growing oil and gas sector, this industry helped Alberta develop an abundance of expertise in a number of important engineering disciplines as well as an oversupply of engineers. At the time of this study, the industry employed more than 4500 people giving the province an equivalent ratio of engineers to the total population of Germany and Japan. In recent years, the industry had undergone a large downsizing due to pressures brought on by the recession, government debtload, and a stabilization of the oil and gas industry from the growth years of the late 1970's and early 1980's. Once a project rich environment, the maturation of the Alberta and Canadian markets increasingly forced Alberta operating firms to look abroad for contract opportunities in order to survive. The Consulting Engineers of Alberta identified its key areas of strength which were in demand worldwide and recognized that demand had dropped dramatically outside of these areas. These included technologies related to oil and gas, forest products, agriculture, municipal services, health care, coldweather, and other niches.

In combination with the decline in the domestic market, consulting engineering firms increasingly faced an environment where clients preferred work to be performed in larger portions. This served as a disadvantage for many Alberta firms which for the most part lacked the requisite size necessary to complete world scale projects by themselves. As a result, the Alberta industry experienced a period of consolidation with extensive merger and acquisition activity. Many firms operating in the Alberta consulting engineering industry thus obtained the requisite size necessary to participate in major international and domestic capital projects, although in the most part they remained small in comparison to large foreign competitors.

Firms ranged in nature from large publicly traded corporations (SNC-Lavalin, Stanley Technologies Group) or divisions of publicly traded corporations (Monenco-Agra, HBT-Agra, NovaCorp International) to subsidiaries of large American consulting engineering firms (Bantrel, Ch2MHill, Fluor Daniel Canada) to fairly large privately owned Canadian firms (UMA Group Inc., Delta Catalytic, Associated Engineering, Reid Crowthers Associates, Kilborn Engineering) to smaller niche type players (EBA Engineering, Sproule Associates, Thurber Engineering, CGC Dillon).

The size of these firms (when measured in terms of number of engineers employed in Alberta) ranged from seven firms with over 100 professional engineers to sixteen firms with between 20 and 100 engineers. Table 3 provides an ordering of these firms.

Table 3

THE ALBERTA CONSULTING ENGINEERING INDUSTRY

Company Name	Number of Alberta Registered Engineers
(1) SNC-Lavalin Inc.	166
(2) Monenco-Agra Ltd.	163
(3) Fluor Daniel Canada	152
(4) UMA Engineering Ltd.	125
(5) Colt Engineering Ltd.	115
(6) Stanley Associates Engineering Ltd.	112
(7) Delta Catalytic	105
(8) Reid Crowther	87
(9) HBT Agra	77
(10) Bantrel	51
(11) Associated Engineering	50
(12) Nova Corp International	50
(12) H.A. Simons	46
(13) Ch2M Hill Engineering	44
(14) EBA Engineering	36
(15) Kilborn Engineering	29
(16) Thurber Engineering	29
(16) Sproule Associates	29
(16) AD Williams	27
(17) Klohn Leonoff	25
(18) Golder Associates	24
(19) Quantel	22
(20) Read Jones Christofferson	18
(21) Infrastructure Systems	18
(21) Acres International	18
(21) Sandwell - Swan Wooster	17
(22) Delcan	17
(22) W-E-R Agra	17
(22) I.D. Group	17
(22) CGC Dillon	15
(23) Duckworth Price Henderson	14
(24) Tri-Ocean	12
(25) Shawinigan Integ.	11
(26) Canspec	11
(26) Clifton Associates	10
(27) Optima Engineers	9
(28) Hemisphere Engineering	9
(28) Torchinsky Engineering	

Source: APEGGA 1992 Membership Directory.

When measured in terms of overall corporate size (corporate wide employees), nine of the Alberta operating firms exceeded 1000 employees and a further twenty five counted at least 100 employees. Of these firms, those with 1000 or more employees competed mainly in the general engineering category (Agra Industries, Delta Catalytic, SNC Group, Bechtel Companies, Kilborn, Fluor Daniel, UMA Engineering, Stanley Associates, Associated Engineering). That is, their expertise ranged across a wide spectrum of technologies. Those with less than 1000 employees exhibited a less general complement of skills and competed mainly in speciality categories (Colt Engineering, Reid Crowthers, NovaCorp International, Golder Associates, Delcan, Acres International, GCG Dillon).

A number of reasons existed for the choice of this research site and population of firms. First, the unit of analysis was the project based strategic alliance. Although this form of organization had only recently been adopted by most companies, consulting engineering firms had historically used them to accomplish much of their work, both domestically and internationally. As such allying was and still is a normal form of business operation in this industry.

Second, this industry also provided ample opportunity to observe multi-partner alliances, which were again a normal occurrence. As almost no research existed on the multi-firm form of alliance (Lowendahl, 1992), the engineering industry allowed an appropriate platform to increase understanding of the cooperative dynamics of multi-firm ventures.

Third, the budgetary, logistical, and temporal constraints of the researcher necessitated a limit to the geographical scope of this study. As a result, this study focused on the participation of Canadian based consulting engineering firms operating in the province of Alberta. This data was obtained from the 1993 directory of the Consulting Engineers of Alberta.

Sampling

Given the research site of this dissertation, the next issue to be dealt with was that of the sample. Up to this point, the intent of this dissertation was to examine alliances involving consulting engineering firms operating in Alberta. Addressing the issues of **control factors** and **sample size** allows parameters to be put on the study. By defining the factors to be controlled, the form of alliance to be studied and its domain may be specified. These factors included outcome, context, alliance type, firm role, firm size, and importance. The first control factor was *outcome*. In order to obtain insight into good as well as poor working relations, of the two requested alliances per firm, it was requested that one involve a poor outcome with a partner and the second involve a favourable outcome with a partner. Further, it was expected that such a control would allow for a significant degree of variance in the dependent variable.

Context in this study referred to the domestic versus international nature of alliances. The study was limited study to alliances formed to perform work in the domestic Canadian market. This was done because of the differing meanings of contracts in different nations and cultures. Whereas in a North American context, the written stipulations of contracts form the bases of agreements and generally take precedence before the courts, such is not always the case in other cultures. For instance, in Japan, implicit contracts based on existing relationships are often used in place of written agreements (Gerlach, 1992). Or in the case of many other Asian countries, contracts are viewed simply as a formality in undertaking business ventures. In such cases, kinship or other forms of social ties often play a much more important role. Given the emphasis of this study on the written dimensions of contracts, alliances, where the work was to be performed in Canada, provided an appropriate context.

A third control factor was *alliance type*. Existing research into alliances and their subsequent performance had been handicapped by a lack of specificity regarding the

venture form under study. An exemplar of this was found in the work of Harrigan (1988) who defined an alliance as a partnership among firms that work together to attain some objective. Such a definition, however, covered a broad spectrum of alliance arrangements and was typical of many definitions found in the alliance literature. This spectrum ranged from simple spot contracts on one hand to mergers and acquisitions on the other (Murray & Siehl, 1989). The spectrum's range also included as wide an assortment of arrangements as buy back agreements, contingent claims contracts, counter trade agreements, cross distribution agreements, cross licensing agreements, joint bidding consortia, minority investments, research and development partnerships, and technology transfer agreements. As an exemplar, Harrigan's (1985) definition was problematic primarily because of what is ignored. An examination of the categorizations found in the alliance literature highlights a number of these omissions.

Some scholars have focused attention on governance related issues such as whether or not a separate entity was established (Anderson, 1990; Borys & Jemison, 1989; Geringer, 1988; Harrigan, 1988; Hennart, 1988) or whether an exchange of equity took place (Geringer, 1988; Hennart, 1988; Killing, 1988; Osborn & Baugh, 1990; Gomes-Casseres, 1987; Kogut, 1987; Gulati, 1995). Others differentiated alliances by internal characteristics such as the means of venture control (Killing, 1988; Gray & Yan, 1992; Harrigan, 1986), the sphere of activity and operations (Geringer, 1988; Kogut, 1988) or the primary function of the alliance (Kogut, 1988; Adler & Hlavacek, 1976). In other instances attention was focused on the complexity of the organizational arrangement (Murray & Siehl, 1989). Finally, contextual concerns such as the industry in which the alliance participates (Geringer & Hebert, 1991; Koh & Venkatraman, 1991; Harrigan, 1985, 1987, 1988; Parkhe, 1993a,b; Luke, Begin, & Pointer, 1989; Fusfeld, 1958; West, 1959; Stuckey, 1983; Pfeffer & Nowak, 1976; Burgers, Hill and Chan, 1993; Hagedoorn & Schakenraad, 1994; Shan, Kogut, & Walker, 1995), or the nationality of the partners

(Parkhe, 1993a, 1993b; Tomlinson, 1970; Beamish, 1985; Renforth, 1974; Bleeke & Ernst, 1991; Cullen, Johnson, & Sakano, 1995; Millington & Bayliss; 1995) served to differentiate other cooperative ventures.

Despite this wide variety of categorization types, a common research practice was to apply research findings to alliances in general, rather than accepting that differences in alliance type may be significant. However, consistent with Lorange and Roos (1992), this study accepted the notion that different forms of alliance exist and assumed a more appropriate means of study was to focus on specific types of alliances.

Lorange and Roos (1992) suggested the existence of four primary types. Ad hoc pools result when parents invest only a minimum set of resources on a temporary basis to complement each other in the short term with all value created returning to the parents. R&D alliances where partners supply technologies and scientists in return for expected scientific breakthroughs are termed consortia. A consortium exists if the parents are willing to invest for the longer term but still want the value created in the venture to be disbursed back to the parents. Infrastructure based engineering and construction alliances represent project based joint ventures. These occur when the parent's invest the minimum strategic resources necessary to jointly create strategic value through a common organization. The value created is not disbursed back to the parent's except possibly through financial payment, royalties, or the like. Canatom Inc., an independent organization set up by Monenco Inc. and SNC Group Ltd. to develop and market nuclear technology internationally represents an example of a full blown joint venture. These exist when significant resources are invested and the resources are retained by the alliance resulting in a more or less free standing organization (Lorange & Roos, 1992).

This dissertation focused on the project based joint venture form of strategic alliance for four reasons. First, the project based form of joint venture was the most common form of alliance used in this industry. Although the strategic alliance is a form of

organization which had been adopted only recently by most companies, engineering firms have historically used them to accomplish much of their work, both internationally and domestically. As such, the project based joint venture was a normal form of business operation in this industry. Second, unlike consortia, or full blown joint ventures, project based joint ventures are finite in duration allowing identification of a temporal start and end point which increased the ability to determine success or failure. Third, project based joint ventures normally involved more than two partners. As almost no research existed on multi firm alliances (Lowendahl, 1992) a study of project based joint ventures would allow greater understanding of the cooperative dynamics involved when more than two firms cooperate. Finally, a study of project based joint ventures differentiated itself from studies of other forms of alliance primarily because firms cooperating in this manner undertake work for a client. Alliance partners do not retain the physical or conceptual output of the venture. As a result, client driven alliances might have involved different cooperative dynamics than other forms.

The fourth control factor, *firm role* was related to alliance type. Despite the limited geographical scope of the industry, it was almost impossible to obtain an accurate count of alliances taking place within it. Indeed, no all inclusive published listing of engineering related alliances existed. One reason for this was that it was quite common for larger firms to be involved in more than one hundred alliances at any one time. Regardless, it was possible to describe the three main forms of inter-firm relations common to project based alliances in this industry. One was the formally incorporated joint venture involving two or more partners. A second was the unincorporated joint venture where two or more fairly equal partners are linked contractually. The third form of alliance was the traditional contractor-subcontractor agreement whereby a client contracts a project to one firm which in turn sub-contracts components to other firms.

This third form was addressed because it was the most common form of project based joint venture used in the industry.

Within contractor -subcontractor arrangements, there exists under normal circumstances a power differential. As the main contractor to a client, a lead firm normally incurs greater absolute financial risk and responsibility than a subcontractor should warranty or quality problems arise. As a result, lead contractors normally have more say in the makeup of inter-firm contracts than subcontractors. Further, these firms are in the position to actually formulate the inter-firm contract as opposed to having to accept the contractual specificities from more dominant partners. As well, in the context of a large scale multi-firm alliance, sub-contractor input into the final product may range from crucial to negligible. Thus it is to be expected that each sub-contractor's inclusion in the inter-firm contract will vary accordingly. Given this, the focus was on consulting engineering firms which played the lead role in strategic alliances. However, these arguments were also examined from the point of view of the sub-consultant in cases where such a firm's role in an alliance was normally that of a sub-consultant .

The fifth control factor was *importance*. In this study, the interest was on alliances which were important, primarily in dollar terms, to each firm. It was expected that firms would pay more attention to contractual specificity and issues of relational risk when alliances were important to them as opposed to unimportant. However, a big, important project for a medium size firm might have been a somewhat significant undertaking for a large firm. As such, importance was controlled by measuring the percentage contribution of the alliance to the firm's annual revenues. However, as noted in the previous chapter, alliances may be important for reasons other than simply revenue or profit. Thus, a second control for importance was to request that respondents answer the survey questions with regards to alliances of importance to their firm and then within the survey request the specific reason for the project's importance.

The final control factor was *firm size*. This tied directly to the second overarching issue of **sample size.** For a number of reasons, a minimum sample size of 50 alliances was targeted. First, a sample of 50 allowed the necessary statistical power to employ the appropriate multivariate statistical techniques necessary to test the study's hypotheses. Second, by requesting information regarding two alliances from each firm (twenty five organizations in total), such a study would prove to be a very manageable task. Included in the sample were the twenty five largest firms in Alberta, as measured by the number of registered engineers. This followed Perrow's (1986) assertions that large firms should be studied because they matter and are more important than small firms.

The terms large and small were relative in nature. By including the largest twenty five firms, this sample controlled for size by allowing the study of both large and medium size firms while excluding the vast number of firms which employed only a handful of individuals. The importance of this was to increase the possibilities of studying alliances related to large and complex capital projects, as well as involving large sub-contractors. Thus, the assumption is that larger firms would more actively participate in large projects and in turn play more important roles than small firms. This data was obtained from the Membership Directory of the Association of Professsional Engineers, Geophysicists and Geologists of Alberta. A third reason for targeting fifty alliances was the increased possibility of obtaining two alliances from each firm (twenty five organizations in total).

To increase the reliability of this study's findings, two executives per firm were asked to participate. The idea was to obtain complementary evidence the could strengthen or refute the arguments of this dissertation.

In order to increase variability of the dependent variable, the intent was to obtain from each firm an example of an alliance with a positive outcome (e.g. high perceived fair treatement) and an example of an alliance with a negative outcome (e.g. low perceived fair

treatment). If two executives per firm were willing to participate, a pair of insights regarding each alliances would further strengthen the reliability of this study.

Although the target of 50 total alliances was met, the goal of 50 matched pairs was not. Two primary reasons exist for the latter occurrence. Either upon arrival for the appointment, the executive to be interviewed stated that he was the only person available for this purpose. Or, in the case where two executives were interviewed, each was unfamiliar with the other's alliance experiences.

42 executives from 24 consulting engineering firms were interviewed. Data regarding 53 alliances was obtained. However, only 18 of these were matched with corresponding values from a second respondent. Of the 18 matched pairs, 10 related to "good" alliances and 8 were based on "bad" alliance experiences. The figures for the 35 single respondent alliances were 17 "good" examples and 18 "bad" examples. Table 4b provides a summary of these response figures.

Table 4

SUMMARY OF RESPONSES

	One Respondent	Two Respondents	Total
Total Alliances	35	18	53
No. of "Good" Alliances	17	10	27
No. of "Bad" Alliances	18	8	24

For the 18 alliances where a matched pair of responses was available, the following action was taken to increase the reliability of attributing to them a single score. A Pearson correlation analysis was run on each pair. A high correlation would indicate a high level of reliability between responses. Correlations for fourteen of the eighteen pairs were statistically significant at the 0.01 level indicating a high level of inter-rater reliability for these pairs. These results are found in Table 5. An average was then taken for each pair of responses allowing them to be reduced to a single score. Despite the insignificance of the correlation statistics for four of the pairs, they are all in the predicted directions. Thus, averages for all pairs were included in the ensuing analysis.

A number of reasons support the inclusion of these four response pairs. First, if detached objectivity has a role to play in academic studies such as this, is it not a more appropriate stance to report any exceptions and conduct the analysis with these exceptions included? A, perhaps, less desirable approach would be to drop the "offending" pairs and then conduct the analysis. In this case, personal integrity dictates acceptance of the former approach.

Second, concepts and variables which are clearly understood in the mind of the researcher may not be clearly understood by some respondents, despite the best efforts to pre-test survey instruments.

Third, in some cases, where pairs of respondents within the same firm occupy different hierarchical levels, perform different functions, or have access to differing levels of information, understandings of the same alliances and surrounding events may differ. These differences may also be the result of individual personalities or membership in different internal political groups.

Fourth, although statistically insignificant, the correlations are in the expected direction.

Finally, these discrepancies may be attributed to a 'luck of the draw" causality. In such cases, perhaps an expectation of 100% similarity is wishful thinking. Martin and Meyerson, (1990) provide evidence to suggest that unitary views of corporate culture are more often than not theoretical in nature, held only by a minority at the very top of organizations. A 22% percent (4 of 18 cases) discrepancy rate is probably a more realistic expectation of inter-rater reliability.

Table 5

INTER - RATER RELIABILITY INDICATORS FOR THE MATCHED PAIR RESPONSES

Alliance #	**Pearson Correlation Coefficients & (P-values)**
1	0.893 (.000)***
2	0.737 (.010)**
3	0.604 (.000) ***
4	0.328 (.325)
5	0.408 (000)***
6	0.122 (.725)
7	0.350 (.292)
8	0.345 (.300)
9	0.603 (.050)**
10	0.964 (.000)***
11	0.987 (.000)***
12	0.883 (.000)***
13	0.677 (.020)**
14	0.876 (.000)***
15	0.805 (.000)***
16	.915 (.000)***
17	.967 (.000)***
18	.755 (.040) **

*p<.05. **p<.01. ***p<.001.

Strategy

In order to undertake this research, a three phase approach was used. In the first phase, exploratory interviews with industry observers and participants allowed the researcher to gain practical insight into the formation and management of alliances. This led to the development of the dissertation's concepts, hypotheses and survey instruments. Phase two of this research was the major fieldwork. This involved the actual use of the data collection instruments. The third phase of the dissertation schedule included the data analysis and completion of the dissertation write-up.

Phase 1

In Phase One of this endeavour, executives from twenty consulting engineering firms were asked to describe two alliances (one international and one domestic) in detail with their descriptions being written up informally into mini cases by the researcher. Although this provided the researcher with the necessary contextual understanding, the primary basis for the concept and hypotheses formation were theoretical arguments derived from agency theory (Eisenhardt, 1989) and transaction cost economics (Williamson, 1975; 1985). The concepts and hypotheses of this thesis were then developed and data collection methods and measures (mainly five point Likert scales) constructed in order to test each construct.

Development of the Instrument

A survey instrument was one of two primary means used to test the hypotheses of this study. Although initially constructed during this first phase, refinement of the survey's construct measures was completed following data collection but prior to its analysis. Each

construct was measured using five item Likert scales with pilot tests of 10 cases serving to increase the content validity of each scale. The complete survey instrument can be found in Appendix 1.

As discussed previously, the theoretical constructs of this study included the following dependent variables: flexibility, equitable treatment and transaction costs. The independent variables included contract specificity and relational risk. When relational risk was positioned as a dependent variable, experience, due diligence, organizational asymmetry, geographic proximity and partner dependence served as independent variables.

Following accepted social science research tradition, it was decided that existing measures of the theoretical constructs would be used if found to be appropriate for the purposes of this study. Use of such measures increases the ease of future inter-study comparisons and the accumulation of knowledge regarding this important topic. By maintaining consistency of measures wherever possible, future researchers will be able to more confidently ascribe differences and similarities in findings to the respective treatments. However, such existing measures were not blindly accepted without review. The reliability of each scale was checked and in several instances individual scale items were dropped.

Although the intention was to use established scales, the novelty of this study necessitated the construction of original measures for the following constructs: contract specificity, transaction costs, experience, due diligence, organizational asymmetry, partner dependence and geographic proximity. These measures were constructed primarily through reference to existing theoretical and empirical studies. Refinement of the measures prior to data collection occurred by two means. First, a preliminary refinement was accomplished by incorporating the review comments of three industry executives interviewed specifically for this purpose. The task was then completed following a pilot

test involving five organizations and ten observations. The researcher was present in all cases for the survey examinations. Data collected during the second phase of this study provided a means to further refine the scales prior to the testing of the null hypotheses.

Construction and refinement of the new scales followed a modification of a procedure developed by Churchill (1979). A list of questions was formulated for each construct. By design, more questions than necessary were included in order to provide the maximum amount of flexibility in purifying the scale. Realizing that the final refinement of measures used in this study would have to occur after the survey had actually been completed, as many measures of the theoretical constructs as was reasonably possible were included in the original questionnare. This tactic afforded the luxury of discarding measures that were poorly behaved.

Scale refinement was completed on the set of 53 alliances. The primary refinement tool used to measure the acceptability of a construct was Cronbach's alpha. In most cases, an alpha level of above .70 was obtained. In one instance, an alpha below .60 occurred (organizational asymmetry; alpha = .41). Nunnally (1967) suggests that while for decision making alpha scores of .90 or greater are desirable, alpha scores greater than .50 are acceptable for theory testing and related work. In the second edition of the same referenced work, (Nunnally, 1978), the author suggests the appropriate standard would be that of .70 or greater. When an alpha was found that did not meet Nunnally's second criterion, principal components analysis was used as a means to identify items which did not fit the scale in question. These items were then dropped and a Cronbach's alpha again used to measure the acceptability of the scale.

Each of the measures in this study, with the exception of organizational asymmetry, met Nunnally's original mark as well as the more rigid level after certain items were dropped. Given its theory testing aim, this study's alphas are thus acceptable. Further, all of the measures with the exception of those for three constructs (relational

risk, contract specifcity and experience) loaded onto one factor. These three exceptions loaded onto two factors. The alpha's obtained with each scale are reported below and summarized in Table 6.

Table 6

SUMMARY OF SCALE PROPERTIES

Name	No. of Items	Alpha	No. of Factors
Flexibility	4	.81	1
Equitable Treatment	6	.90	1
Transaction Costs	7	.82	1
Contract Specificity	11	.92	2
Relational Risk	6	.70	2
Experience	4	.77	2
Due Diligence	3	.72	1
Organizational Asymmetry	3*	.45*	1*
Geographic Proximity	1	-	1
Partner Dependence	1	-	1

* This construct was divided into three separate subconstructs measures. The refinement is discussed further on.

Dependent Variables

(a) Transaction Costs

Williamson (1985) defined transaction costs in the abstract as "the costs of operating the economic system." This construct was measured using seven items with its scale being shown in Table7. The scale distinguishes between low and high transaction costs. A low score indicates transactions costs that are lower than usual and a high score indicates higher than usual transaction costs. An appropriate scale measure of this construct could not be found in the existing literature. An original scale of six items was

built yielding a pilot tested Cronbach's alpha of .70 Following executive feedback, one further item was added leading to a Cronbach's alpha of .82.

(b) Equitable Treatment

The items measuring equitable treatment were an adaptation of Greenberg's (1986) five item interpersonal scale measurement of the determinants of perceived fairness of performance appraisal. The pilot test of this construct's measures yielded a Cronbach's alpha of .78. Examples of Greenberg's (1986) items included: (a) soliciting input prior to evaluation and using it; and (b) ability to challenge/rebut evaluation. Adaptation of these two were as follows: (a) "its openness to challenge or rebuttals when judging your firm's work"; and (b) "its efforts to solicit input and use the information when making decisions which impact upon your firm." A high score on the scale indicates a much higher perception of equity than is usual while a low score indicates a much lower perception of equity than is usual. The Cronbach's alpha of the adapted scale following data collection was .90. The scale is found in Table 7.

(c) Operational Flexibility

A four item scale adapted from Mascarenhaus (1985) measured operational flexibility and is again found in Table 7. Adaptations to the scale made them more directly relevant to consulting engineering firms. For instance, "raise funds in an emergency" was changed to "raise funds in an emergency from the partners or outside sources" and "adjust management procedures" to "adjust management procedures to fit the project purpose." A high score on the scale indicates flexibility that was far greater than is normal and a low score indicates far lower than is normal flexibility. The pilot test alpha of the adapted scale measured .88 which declined to .81 following collection of the data set.

Table 7

CONSTRUCT MEASURES: DEPENDENT (PERFORMANCE) CONSTRUCTS

Construct	Cronbach's Alpha	Scale Measures	Questions
Flexibility	@=.81	1 to 5 Far lower than is normal (=1) to Far greater than is (=5)	Please compare in retrospect, this project to other similar (in terms of importance and complexity) projects in which your firm has participated. Given the nature of contractual relations linking your firm to the partner, please rate the ability of the project partners as a whole to: 1, adjust the size of the work force to cope with unexpected demands? 2, adjust management procedures to fit the project purpose? 3, change the mix of engineering services being provided with existing resources? 4, obtain outside sources of technological knowhow or services when necessary?
Fairness	@=.90	1 to 5 Much lower than is usual (=1) to Much higher than is usual (=5)	Please compare in retrospect, this project to other similar (in terms of importance and complexity) projects in which your firm has participated. Please rate your partner on the following dimensions. The partner's: 1, efforts to apply consistent standards to decision making which affects your firm? 2, familiarity with the work undertaken by your firm for this venture? 3, openness to challenges or rebuttals when judging your firm's work? 4, efforts to solicit input and use the information when making decisions which impact upon your firm? 5, efforts to maintain open lines of communication with your firm's decision makers? 6, overall ethicality in its treatment of your firm?

Table 7 (cont.)

CONSTRUCT MEASURES: DEPENDENT (PERFORMANCE) CONSTRUCTS

Construct	Cronbach's Alpha	Scale Measures	Questions
Transaction Costs	@=.82	1 to 5 Much lower than is normal (=1) to Much higher than is normal (=5)	Please compare in retrospect, this project to other similar (in terms of importance and complexity) projects in which your firm has participated. In this question we are interested in the costs which your firm incurred to monitor your partner's activity. Were the following costs higher or lower than is usual: 1, travel costs? 2, communication charges? 3, legal fees to enforce or interpret the subcontract? 4, payment enforcement or compliance costs (haggling)? 5, design or product inspection costs? 6, management technology compatibility costs? 7, design or product specification development costs?

Independent Variables

(d) Contractual Specificity

An 11 item scale (reproduced in Table 8) was used to measure contract specificity. The scale was built by mixing theoretical insight and practitioner feedback. The scale sought to determine whether a sub-contract agreement more closely resembled an outcome or behaviour oriented instrument. Items included: "final product/design specification and performance standards; penalty/bonus clauses for task performance; venture termination contingencies; payment terms and conditions; warranty/liability concerns; staffing levels; insurance requirements; formal authority structures"; and "information system reporting requirements". A high score on the scale indicates a sub - contract written with much less detail than is normal. A low score indicates a contract written with much more detail than is usual. Pilot tests of this the construct resulted in a Cronbach's alpha of .82. Executive feedback resulted in the addition of two items to the

scale, "project scope" and "project schedule." Analysis of the collected data set yielded a final Cronbach's alpha of .92

(e) Relational Risk

Relational risk refers to a firm's overall a priori perception or fear of opportunistic behaviour by a partner. Parkhe's (1993) six item scale measurement of opportunistic behaviour (also found in Table 8) was adopted resulting in a pilot tested Cronbach's alpha of .88 and a final alpha of .70 Items within the scale remained the same while the context of the question was slightly altered to refer to the negotiations phase of the alliance as well as to drop leading and value laden explanations of the construct. Two items on the scale were reverse scored. This mimics Parkhe's (1993) use of these items. A high score indicates a low degree of relational risk while a low score indicates a high degree of relational risk.

Table 8

CONSTRUCT MEASURES: INDEPENDENT CONSTRUCTS

Construct	Cronbach's Alpha	Scale Measures	Questions
Relational Risk	@=.70	1 to 5 Strongly Agree (=1) to Strongly Disagree (=5)	Before commencement of the project work, to what extent did you believe that: 1, They would always provide a completely truthful picture of their business 2, Complete honesty would not pay when dealing with the partner 3, Sometimes the partner would alter the facts slightly in order to get what they needed 4, The partner would carry out duties even if we did not check up on them 5, The partner would sometimes promise to do things with actually doing them later. 6, They would be willing within their means to further their firm's interests
Contract Specificity	@=.92	1 to 5 Much more detail than is usual (=1) to Much less detail than is usual (=5)	Please compare in retrospect, this project to other similar (in terms of importance and complexity) projects in which your firm has participated. To what extent were the following dimensions detailed in the partner subcontract: 1, final product design specification and performance standards? 2, payments terms and conditions? 3, penalty/bonus clauses for task performance? 4, venture termination contingencies? 5, warranty/liability requirements? 6, insurance requirements? 7, staffing levels? 8, formal authority structures? 9, information system reporting requirements? 10, project scope? 11, project schedule?

(f) Experience

Four items were used to measure the experience construct (see Table 9). An analysis of the collected data yielded a Cronbach's alpha of .77 with a two dimensional factor. Close examination of the data indicated that of the five theoretical dimensions of experience discussed previously, only those relating to the client and the partner were empirically justified as appropriate measures. A high score on the scale measuring experience indicates a high level of satisfaction and experience with the client and the partner, while a low score indicates a low level of satisfaction and experience with the client and partner.

(g) Due Diligence

Three items, "project identification and selection", "partner identification, verification, and selection" and "formulation of the partner sub-contract", were used in the measurement of the informational due diligence construct. High scores on the scale indicate a much lower amount of managerial time and effort being devoted to these three items while a low score indicates a much higher amount of managerial time and effort being devoted to accomplishing these tasks. An analysis of the collected data set yields a Cronbach's alpha of .72. (see Table 9).

(h) Organizational Asymmetry

Organizational asymmetry was measured on the survey using eleven items. A principal components analysis was used to complement Cronbach's alpha measures to diagnose the construct measures. Repeated analysis of the data was unable to find a scale which appropriately held together measures of the five sub-constructs theorized to comprise organizational asymmetry. A principal components analysis indicated that this construct would be more appropriate if divided into three separate subconstructs, size disparity, risk asymmetry, and surprise, all reported Table 9. Size disparity and surprise

were measured using one item scales . High scores on these scales indicate a high similarity in firm size between partners and an admission of not being very surprised if such a partner acted in an unexpected manner. Low scores indicate the converse. That is, the two partners display low similarity in size but would be very surprised if the partner acted in an unexpected manner. Risk asymmetry was measured using two items. A high score indicates a very high similarity regarding the importance of the venture to each partner and a high similarity in the level of resources committed to the project relative to their own size. A low score indicates a low similarity in this regard.

(i) Geographical Proximity:

The geographical proximity construct measures how far apart the decision making offices of each partner are located. Respondents were simply asked to indicate the name of the city of their decision making office for the project and that of their partner. A low score indicates close proximity while a high score indicates a great distance apart. The item is shown in Table 9.

(j) Partner Dependence:

The partner dependence construct is measured by means of a one item construct reported in Table 9. A high score indicates a high dependence by the partner on other firms to accomplish its portion of the work while a low score indicates the reverse.

Table 9

CONSTRUCT MEASURES: INDEPENDENT CONSTRUCTS OF RELATIONAL RISK

Construct	Cronbach's Alpha	Scale Measures	Questions
Experience	@=.77	1 to 5 Very low\none (=1) to Very high (=5)	Prior to entering into this project relationship, what was your firm's previous level of experience: in projects with your partner? with the client? Prior to entering into this project relationship, what was your firm's overall level of satisfaction: with your partner? with the client?
Due Diligence	@=.72	1 to 5 Much higher than is usual (=1) to Much lower than is usual (=5)	Compared to your participation in other similar ventures, please indicate whether the managerial time and effort devoted to coordinating the following tasks was higher or lower than is usual: formulation of the partner contract? project identification and selection? partner identification, verification and selection?
Geographical Proximity	1 variable	1 to 5 Close (=1) to Far (=5)	Project decision making office location of your firm? of your partner?
Partner Dependence	1 variable	1 to 5 Very low (=1) to Very high (=5)	What was your expectation prior to the commencement of project work , that the partner would be dependent on other firms to complete its contracted portion of the project?
Size Disparity	1 variable	1 to 5 Very low similarity (=1) to Very high similarity (=5)	Prior to the commencement of project work, how similar did you perceive your firm to be on the following dimensions: Firm size (# of employees)
Risk Asymmetry	@=.45	1 to 5 Very low similarity (=1) to Very high similarity (=5)	Prior to the commencement of project work, how similar did you perceive your firm to be with your partner on the following dimensions: importance of the venture to each firm? level of resources committed to the project relative to firm size?
Apprehension	1 variable	1 to 5 Very surprised (=1) to Not very surprised (=5)	In retrospect, how surprised would you have been if your partner acted in an unexpected manner?

Open Ended Questions

As with all studies of this nature, it was recognized that explanations other than those proposed for the hypotheses might exist. Mechanisms other than the written contract may be more important in the management of relational risk or the predictions may simply be inaccurate. As a result, also included in this study were open ended questions which sought to complement the data obtained from the survey. One series of questions sought to determine alternative forms of protection from relational risk. Respondents were asked: (1) "whether their firm had experienced good and bad relationships with project partners"; (2) "what the terms `good relationship' and `bad relationship' meant to them"; (3) "whether any signals existed which might indicate to them whether a relationship was on track to go bad or work well"; (4) "what they normally did to ensure a relationship remained good or if bad, how they improved it or protected their firm"; and (5) "what the terms `appropriate contract' and `inappropriate contract' meant to them. Two other open ended questions asked respondents to write, in their own words, the primary reasons for the importance of the projects and the primary reasons for the good or bad relationship with the partner.

Phase 2

Phase Two of this research was the major fieldwork. This involved the actual use of the data collection instruments and took place during the months of November, 1994 through February of 1995. The interviews and survey completion took place in the offices of alliance participants. When this was not the case, telephone interviews served as a means to obtain the necessary information.

The data collection procedure proceeded as follows. First, support was obtained from the professional (Association of Professional Engineers, Geologists, and Geophysicists of Alberta) and industry (Consulting Engineers of Alberta) bodies governing

consulting engineers in Alberta. Second, the resident senior executive of each targeted firm was contacted by phone through his or her secretary to request his or her firm's participation in the study. If requested, a letter of introduction was faxed to the firm's office. An example of this letter may be found in Appendix 2.

The researcher introduced himself to each senior executive, explained the nature of the phone call. Each was then asked if two other senior executives would be willing to participate in a study of the management of project based strategic alliances. Explaining further, it was asked that these two individuals be cognizant of the operational details of numerous alliances. Permission to interview each for 75 minutes within the following three months at his or her office was requested. Of 28 executives contacted, 24 agreed to their firm's participation in the study.

Given that the request was also for a time convenient to these individuals and that they be knowledgeable in regards to the same alliances, one or more follow-up phone calls were necessary. In some cases, the participants were phoned directly, and in other cases the appointment was arranged by the senior executive. Following Huber and Power's (1985) recommendation that participants be chosen with unique areas of knowledge to offset those of the other informants, the inclusion of three possible types of executives was suggested. One might have responsibility for alliance negotiations. Another might be in charge of the day to day operations of the alliance. A third possibility was an executive who was actively involved in either of the two preceding functions along with other responsibilities.

Each appointment proceeded as follows. The researcher introduced himself, explained the purpose of the study, assured confidentiality of any interview specifics, and promised the respondent a copy of the study's results at its conclusion. The participant was then asked to think of two multi-firm alliances or contractor sub-contractor relationships which he or she knew well. It was then requested that one alliance involve a

partner with whom the firm had a good relationship and a second where the relationship was poor or not so good. Finally, it was requested that these two alliances be well known to the second participant who would be interviewed next.

The survey was then administered with the researcher in attendance. Each executive completed one survey in regards to both alliance relationships, marking a "G" when referring to a good outcome relationship and a "B" when referring to a bad outcome relationship. The participant was then posed the open ended questions highlighted earlier. Hand written notes were taken. This completed the interview. The executive was thanked for his or her time and again, promised a copy of the results upon completion of the study. The researcher then asked to see the second study participant.

Upon meeting the second executive, the researcher once again introduced himself, explained the purpose of the study, assured confidentiality of any interview specifics, and promised to provide him or her with a copy of the study's results. The first respondent was then asked to identify the two alliances and partner relationships to the second respondent. The first respondent then departed after being thanked and the second interview proceeded as above.

As noted above, confidentiality of information was assured the respondents. Each was informed that the specifics of his or her responses would be known only to the researcher and his dissertation committee. They were also told that the actual information would be used and reported in an aggregate manner with specific mention of each firm being limited to the listing of participating companies found in the following Table 9A. Finally, the participants were informed of the researcher's intention and obligation to uphold the ethical standards set by the University of Alberta regarding this matter.

Table 9a

LIST OF PARTICIPATING COMPANIES

SNC - Lavalin Inc.
Monenco Agra Inc.
Agra Earth and Environmental Inc.
UMA Engineering Ltd.
Fluor Daniel Canada Ltd.
Stanley Industrial Consultants Ltd.
Reid Crowther and Associates Ltd.
Associated Engineering Inc.
Ch2MHill Engineering Inc.
EBA Engineering Inc.
Thurber Engineering Inc.
Sproule Associates Ltd.
AD Williams and Associates Ltd.
Golder Associates Ltd.
Quantel Engineering Inc.
Read Jones Christofferson Inc.
Infrastructure Systems Ltd.
Acres International Ltd..
Optima Engineers Inc.
Hemisphere Engineering Inc.
Maxim Engineering Inc.
Keen Engineering Inc.
J.R. Paine and Associates Ltd.

Phase 3

Phase Three of this dissertation was the data analysis and writeup. Statistical analysis was used to test the main hypotheses of this study and to test for the determinants of relational risk. As noted above, qualitative analytical techniques were available for use if necessary to analyze the results of open ended questions regarding the use of protective mechanisms other than the alliance contract.

For the four hypotheses, the multidimensional survey measurement of performance developed in this study suggested the use of data analytic techniques capable of uncovering complex patterns of relationships involving sets of dependent and independent variables. In order to test the hypotheses, the construct measurement scores were standardized into composite measures. For example, this study borrowed Parkhe's (1993) six item scale to measure relational risk. The use of a composite measure allowed the items of this construct to be reduced to one summary item. Given this, use was made of multiple linear regression analyses and partial correlation coefficient statistics.

Multiple linear regression analysis provides a means to analyze a situation where a given dependent variable is affected simultaneously by several independent variables. Each coefficient of an explanatory or independent variable measures the impact of a one unit change in that variable on the dependent variable, holding all the other variables fixed (Jobson, 1992; 226). This allows the variation in a dependent variable to be explained in terms of the variation in a number of other independent variables.

Partial correlation coefficient statistics were used to test Hypotheses 1 and 2. The full set of these statistics are found in Table 10.

Table 10

PEARSON CORRELATION COEFFICIENT STATISTICS FOR THE FULL DATA SET

PEARSON CORRELATION MATRIX

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Contract	1.000										
Specificity	0.000										
(1)											
Transaction	0.060	1.000									
Costs	0.668	0.000									
(2)											
Fair	-0.395	-0.482	1.000								
Treatment	0.003	0.000	0.000								
(3)											
Flexibility	-0.413	-0.301	0.697	1.000							
	0.002	0.029	0.000	0.000							
(4)											
Due	0.159	-0.188	0.140	0.091	1.000						
Diligence	0.255	0.178	0.316	0.516	0.000						
(5)											
Experience	0.005	0.254	-0.262	0.001	-0.064	1.000					
	0.970	0.066	0.058	0.995	0.651	0.000					
(6)											
Surprise	-0.020	0.386	-0.345	-0.372	-0.228	0.259	1.000				
	0.890	0.004	0.011	0.006	0.101	0.061	0.000				
(7)											
Partner	-0.053	0.129	-0.026	-0.156	-0.085	-0.262	0.238	1.000			
Dependence	0.704	0.356	0.851	0.265	0.547	0.059	0.087	0.000			
(8)											
Size	0.018	0.226	-0.040	-0.181	-0.040	-0.336	0.083	0.499	1.000		
Asymmetry	0.900	0.104	0.777	0.194	0.776	0.014	0.556	0.000	0.000		
(9)											
Risk	-0.019	0.108	0.142	-0.018	-0.113	0.011	-0.019	-0.035	0.115	1.000	
Asymmetry	0.892	0.443	0.310	0.898	0.422	0.939	0.891	0.802	0.413	0.000	
(10)											
Relational	0.003	-0.353	0.267	0.200	0.193	0.020	-0.557	-0.252	0.147	-0.195	1.000
Risk	0.986	0.010	0.050	0.150	0.166	0.885	0.000	0.068	0.292	0.162	0.000
(11)											

BARTLETT CHI-SQUARE STATISTIC: 149.734 DF= 55 PROB= .000
NUMBER OF OBSERVATIONS: 53

Hypothesis 3 was tested with the use of multiple regression analysis. A multiple linear regression procedure allowed the testing of Hypothesis 4. Summary statistics for the data set may be found in Table 11.

Hypothesis 3 was tested with the use of multiple regression analysis. A multiple linear regression procedure allowed the testing of Hypothesis 4. Summary statistics for the data set may be found in Table 11.

Table 11

SUMMARY STATISTICS FOR THE FULL DATA SET

Diligence	Contract Specificity	Transaction Costs	Fair Treatment	Flexibility	Due
N OF CASES	53	53	53	53	53
MINIMUM	1.500	1.000	1.143	1.750	1.000
MAXIMUM	4.667	4.750	4.571	4.000	4.250
RANGE	3.167	3.750	3.429	2.250	3.250
MEAN	3.053	3.033	2.904	3.050	2.920
VARIANCE	0.499	0.577	0.739	0.284	0.458
STANDARD DEV	0.706	0.760	0.860	0.533	0.677
STD. ERROR	0.097	0.104	0.118	0.073	0.093
SKEWNESS(G1)	0.733	-0.649	-0.334	-0.067	-0.622
KURTOSIS(G2)	0.316	1.352	-0.754	-0.358	0.971
SUM	161.792	160.750	153.929	161.625	154.750
C.V.	0.231	0.251	0.296	0.175	0.232
MEDIAN	2.833	3.000	2.857	3.000	3.000

Asymmetry	Experience	Surprise	Partner Dependence	Size Asymmetry	Risk
N OF CASES	53	53	53	53	53
MINIMUM	1.000	1.000	1.000	1.000	1.000
MAXIMUM	3.750	5.000	5.000	5.000	4.500
RANGE	2.750	4.000	4.000	4.000	3.500
MEAN	2.363	2.425	2.811	2.189	2.896
VARIANCE	0.474	1.696	2.175	1.454	0.792
STANDARD DEV	0.688	1.302	1.475	1.206	0.890
STD. ERROR	0.095	0.179	0.203	0.166	0.122
SKEWNESS(G1)	0.116	0.510	-0.002	0.879	-0.109
KURTOSIS(G2)	-0.431	-0.901	-1.451	-0.216	-0.747
SUM	125.250	128.500	149.000	116.000	153.500
C.V.	0.291	0.537	0.525	0.551	0.307
MEDIAN	2.250	2.000	3.000	2.000	3.000

	Relational Risk	Geographical Proximity
N OF CASES	53	53
MINIMUM	2.167	1.000
MAXIMUM	5.000	5.000
RANGE	2.833	4.000
MEAN	3.530	1.755
VARIANCE	0.555	2.496
STANDARD DEV	0.745	1.580
STD. ERROR	0.102	0.217
SKEWNESS(G1)	-0.117	1.591
KURTOSIS(G2)	-0.905	0.533
SUM	187.083	93.000
C.V.	0.211	0.900
MEDIAN	3.667	1.000

As discussed earlier, it was understood that other mechanisms besides the intra-alliance contract might also be important in protecting firms from relational risk. Responses to open ended questions were analyzed where necessary, using qualitative tactics proposed by Huberman & Miles (1994). Tactics to decipher or make meaning of the transcriptions included: (1) noting patterns and themes; (2) seeing plausibility; (3) clustering by conceptual grouping (or coding); (4) counting; (5) making contrasts and comparisons; (6) subsuming particulars into the general; and (7) making conceptual theoretical coherence through comparison with referent constructs in the literature. This analysis of multiple data sources served to increase the overall validity of this study's findings as well as provided a more holistic portrait of alliance protective mechanisms.

This chapter has detailed the research site of this dissertation, the sample and sampling methodology used, the methodological strategy used to build the construct measures and collect the data, and finally, the form of data analysis to be used. The next chapter discusses the results of the data analysis.

Chapter 4

RESULTS

The chapter proceeds by order of hypothesis. The results of the empirical test of each hypothesis are detailed and where necessary, further exploration of the issues surrounding each is documented. Table 12, listed below, summarizes the scales of the variables tested in Hypotheses 1 through 3.

Table 12

A SUMMARY OF SELECTED VARIABLE RESPONSE SCALES

Independent and Dependent Variable Names	**A "1" Means:**	**A "5" Means:**
Fair Treatment	Lower	Higher
Flexibility	Lower	Higher
Transaction Costs	Lower	Higher
Relational Risk	Higher	Lower
Contract Specificity	Higher	Lower

Discussion of the Results of the Tests of Hypotheses 1a-1c.

These three hypotheses were tested by measuring three partial correlation coefficient statistics, one for each of the three dependent variables and relational risk. A partial correlation co-efficient measures the linear association between two variables controlling for a third, in this case contract specificity. It is obtained by squaring the root of each relationship's co-efficient of determination. The partial correlation co-efficients are given in Table 14.

Hypothesis 1a: *It was predicted that higher perceived relational risk would accompany perceptions of lower operational flexibility among alliance partners.*

The partial correlation co-efficient for this relationship (reported in Table 13) is statistically significant ($r = - 0.215$). There appears to be a linear relationship between relational risk and operational flexibility when contract specificity is controlled for. **The hypothesis is supported.**

Hypothesis 1b: *It was predicted that higher perceived relational risk would accompany perceptions of lower fair treatment among alliance partners.*

The partial correlation co-efficient for this relationship (reported in Table 13) is, again, statistically significant ($r = -0.271$). A linear relationship is apparent between relational risk and fair treatment when contract specificity is controlled for. **The hypothesis is supported.**

Hypothesis 1c: *It was predicted that higher perceived relational risk would accompany perceptions of higher transaction costs among alliance partners.*

The partial correlation co-efficient for this relationship (reported in Table 13) is statistically significant (r = 0.342). There appears to be a linear relationship between relational risk and transaction costs when contract specificity is controlled for. **The hypothesis is supported**

Table 13

PEARSON CORRELATIONS OF PERFORMANCE WITH RELATIONAL RISK

Dependent Variables	**Coefficient of Determination**	**Partial Correlation Co-efficient**	**P-values**
Flexibility	-0.046	0.215	0.09
Fair Treatment	-0.074	0.271	0.05*
Transaction Costs	0.116	0.342	0.01**

*p<.05. **p<.01. ***p<.001.

In sum, when contract specificity is controlled for, it appears that perceptions of higher relational risk are associated with perceptions of higher transaction costs, lower fair treatment and lower operational flexibility. These relationships are as expected. The next issue to be dealt with (in Hypothesis 2) is whether managers write tighter contracts to protect themselves when faced with higher relational risk.

Discussion of the Results of the Test of Hypothesis 2

Hypothesis 2: *It was predicted that higher perceived relational risk would be accompanied by higher contractual specificity among alliance partners.*

The Pearson correlation coefficient for this relationship (found in Table 10) is not statistically significant (r = 0.003). There appears to be no linear relationship between these two variables. **The hypothesis is not supported.**

This is somewhat surprising. In general, it was expected that higher relational risk would be a concern of managers and thus dealt with by contractual means. This raises the possibility of two other explanations. A first alternative explanation is that managers do not recognize relational risk or if they do, they do not care about it. A second alternative explanation is that the relationship between relational risk and contract specificity may not be so simple. It may be contingent upon other factors such as the performance variables of hypotheses 3a to 3f.

Discussion of the Results of the Tests of Hypotheses 3a-3f

Hypotheses 3a to 3f were tested by running three different sets of regressions for each of the three dependent variables. One set of regressions tested the following hypotheses through the inclusion of a third independent variable which measured the interaction of relational risk and contract specificity on each dependent variable. A second set of regressions repeated this test but made use of recoded independent variables (relational risk, contract specificity, and the interaction of contract specificity and relational risk). Responses to each independent variable's five point likert scale were recoded as integer variables where 0 represented scores of 3 and lower, and 1 represented scores higher than 3. A third set of regressions, using the original, non recoded data,

omitted the independent interaction variable, and focused instead on determining the main effects of relational risk and contract specificity on each of the dependent variables.

The estimated regression coefficients are given in Table 14a, 14b, and 14c. The ratio of each estimate to its standard error determines the t-statistic for testing the null hypothesis that the true regression coefficient is zero. The t-values and their corresponding p-values are also given in the table.

Hypothesis 3a: *It was predicted that perceived transaction costs would be higher when higher contractual specificity accompanied situations of higher perceived relational risk.*

The regression coefficient for this relationship is not statistically significant (β =0.010). The recoded regression coefficient is also not statistically significant when the independent variables are recoded as integer variables (β =0.284). There appears to be no linear relationship between perceived transaction costs and the interaction of relational risk and contract specificity. **When tested statistically, the hypothesis is not supported**.

However, when the independent interaction variable is dropped, the regression coefficient measuring the effect of relational risk on transaction costs is statistically significant. (β = 0.344). Higher transaction costs are associated with higher relational risk. These results are found in Table 14a.

Hypothesis 3b: *It was predicted that perceived fair treatment would be higher when higher contractual specificity accompanied situations of higher perceived relational risk.*

The regression coefficient for this relationship is not statistically significant (β = 0.223). The recoded regression coefficient is also not statistically significant when the

independent variables are recoded as integer variables (β = 0.198). There appears to be no linear relationship between perceived fair treatment and the interaction of relational risk and contract specificity. **When tested statistically, the hypothesis is not supported**.

When the independent interaction variable is dropped, the regression coefficients measuring the effect of relational risk (β = - 0.310), and contract specificity (β = 0.465), respectively, on fair treatment are statistically significant. Perceptions of lower fair treatment are associated with perceptions of higher relational risk. On the other hand, perceptions of higher fair treatment are associated with perceptions of higher contract specificity. These results are found in Table 14b.

Hypothesis 3c *It was predicted that perceived operational flexibility would be lower when higher contractual specificity accompanied situations of higher perceived relational risk.*

The regression coefficient for this relationship is not statistically significant (β = 0.098). The recoded regression coefficient is also not statistically significant when the independent variables are recoded as integer variables (β = 0.375). There appears to be no linear relationship between perceived fair treatment and the interaction of relational risk and contract specificity. **When tested statistically, the hypothesis is not supported**.

When the independent interaction variable is dropped, the regression coefficients measuring the effect of relational risk (β = - 0.161), and contract specificity (β = 0.340), respectively, on operational flexibility are statistically significant. Perceptions of lower operational flexibility are associated with perceptions of higher relational risk. Somewhat surprisingly, perceptions of higher operational flexibility are associated with perceptions of higher contract specificity. These results are found in Table 14c.

Hypothesis 3d: *It was predicted that perceived transaction costs would be lower when lower contractual specificity accompanied situations of lower perceived relational risk.*

The regression coefficient for this relationship is not statistically significant (β = 0.010). The recoded regression coefficient is also not statistically significant when the independent variables are recoded as integer variables (β =0.284). There appears to be no linear relationship between perceived transaction costs and the interaction of relational risk and contract specificity. **When tested statistically, the hypothesis is not supported**.

Consistent with the findings of Hypotheses 3a, when the independent interaction variable is dropped, the regression coefficient measuring the effect of relational risk on transaction costs is statistically significant. (β = 0.344). Lower transaction costs are associated with lower relational risk. These results are found in Table 14a.

Hypothesis 3e: *It was predicted that perceived fair treatment would be higher when lower contractual specificity accompanied situations of lower perceived relational risk.*

The regression coefficient for this relationship is not statistically significant (β = 0.223). The recoded regression coefficient is also not statistically significant when the independent variables are recoded as integer variables (β = 0.198). There appears to be no linear relationship between perceived fair treatment and the interaction of relational risk and contract specificity. **When tested statistically, the hypothesis is not supported**.

When the independent interaction variable is dropped, the regression coefficients measuring the effect of relational risk (β = - 0.310), and contract specificity (β = 0.465), respectively, on fair treatment are statistically significant. Perceptions of higher fair treatment are associated with perceptions of lower relational risk. On the other hand,

perceptions of lower fair treatment are associated with perceptions of lower contract specificity. These results are found in Table 14b.

Hypothesis 3f: *It was predicted that perceived operational flexibility would be higher when lower contractual specificity accompanied situations of lower perceived relational risk.*

The regression coefficient for this relationship is not statistically significant (β = 0.098). The recoded regression coefficient is also not statistically significant when the independent variables are recoded as integer variables (β = 0.375). There appears to be no linear relationship between perceived flexibility and the interaction of relational risk and contract specificity. **When tested statistically, the hypothesis is not supported.**

When the independent interaction variable is dropped, the regression coefficients measuring the effect of relational risk (β = -0.161), and contract specificity (β = 0.340), respectively, on operational flexibility are statistically significant. Perceptions of higher operational flexibility are associated with perceptions of lower relational risk. Consistent with the results of Hypotheses 3d, perceptions of lower operational flexibility are associated with perceptions of lower contract specificity. These results are found in Table 14c.

The analysis of variance for eight of the nine regressions display p-values for the F-statistic that are significant at the 0.05 level indicating that overall, these eight regressions are highly significant. Only the regression of the three non-recoded independent variables on transaction costs is statistically insignificant. The R-square value of each model explains the percentage of variance in the dependent variable accounted for by each regression equation. These values and the corresponding F - statistics are found in Tables 14a, 14b, and 14c.

Table 14a

RESULTS FOR HYPOTHESES 3A AND 3D: THE REGRESSION OF RELATIONAL RISK AND CONTRACT SPECIFICITY WHEN THE DEPENDENT VARIABLE IS TRANSACTION COSTS

Transaction Costs as the Dependent Variable			
		Full Model	
Independent Variables	Beta	T Statistic	P-Value
Relational Risk	0.377	0.630	0.531
Contract Specificity	-0.018	-0.027	0.978
Interaction of Relational Risk and Contract Specificity	0.010	0.056	0.955
R- Squared = 0.120		F-Statistic = 2.239	
	Full Model With Recoded Independent Variables		
Recoded Relational Risk	0.722	2.625	0.011 *
Recoded Contract Specificity	-0.041	-0.111	0.911
Recoded Interaction of Relational Risk and Contract Specificity	0.284	0.633	5.29
R- Squared = 0.174		F-Statistic = 3.445 *	
	Model Without the Interaction Variable		
Relational Risk	0.344	2.578	0.012
Contract Specificity	-0.055	-0.393	0.695
R- Squared = 0.120		F-Statistic = 3.425 *	

*p<.05. **p<.01. ***p<.001.

Table 14b

RESULTS FOR HYPOTHESES 3B AND 3E: THE REGRESSION OF RELATIONAL RISK AND CONTRACT SPECIFICITY WHEN THE DEPENDENT VARIABLE IS FAIR TREATMENT

Fair Treatment as the Dependent Variable			
	Full Model		
Independent Variables	Beta	T Statistic	P-Value
Relational Risk	-0.385	-0.615	0.540
Contract Specificity	1.251	1.774	0.082
Interaction of Relational Risk and Contract Specificity	0.223	1.140	0.259
R- Squared = 0.247		F-Statistic = 5.384 **	
	Full Model With Recoded Independent Variables		
Recoded Relational Risk	-0.901	-3.130	0.002
Recoded Contract Specificity	0.369	0.940	0.351
Recoded Interaction of Relational Risk and Contract Specificity	0.198	0.422	0.674
R- Squared = 0.293		F-Statistic = 6.777 ***	
	Model Without the Interaction Variable		
Relational Risk	-0.310	-2.189	0.033
Contract Specificity	4.655	3.109	0.003
R- Squared = 0.227		F-Statistic =7.382 ***	

*p<.05. **p<.01. ***p<.001.

Table 14c

RESULTS FOR HYPOTHESES 3C AND 3F: THE REGRESSION OF RELATIONAL RISK AND CONTRACT SPECIFICITY WHEN THE DEPENDENT VARIABLE IS OPERATIONAL FLEXIBILITY

Operational Flexibility as the Dependent Variable			
	Full Model		
Independent Variables	Beta	T Statistic	P-Value
Relational Risk	-0.466	-1.133	0.262
Contract Specificity	0.005	0.010	0.991
Interaction of Relational Risk and Contract Specificity	0.098	0.762	0.449
R- Squared = 0.244		F-Statistic = 5.291 **	
	Full Model With Recoded Independent Variables		
Recoded Relational Risk	-0.479	-2.376	0.021
Recoded Contract Specificity	0.083	0.303	0.762
Recoded Interaction of Relational Risk and Contract Specificity	0.375	1.138	0.260
R- Squared = 0.193		F-Statistic = 3.930 *	
	Model Without the Interaction Variable		
Relational Risk	-0.160	-3.481	0.001
Contract Specificity	0.340	1.740	0.087
R- Squared =0.235		F-Statistic = 7.710 ***	

*p<.05. **p<.01. ***p<.001.

In sum, statistical tests did not provide support for Hypotheses 3a through 3f. However, when the independent interaction variable (relational risk and contract specificity) was dropped from each regression, perceptions of higher relational risk were associated with perceptions of higher transaction costs, lower fair treatment and lower flexibility. Perceptions of higher contract specificity were associated with perceptions of higher fair treatment, and somewhat surprisingly, higher flexibility.

In order to explore the reasons for lack of support for these hypotheses, an alternative, qualitative analysis was undertaken. The intent of this qualitative analysis was to explore the possible existence and impact of other variables affecting alliance performance. Examining possible motives not specified in the model is reason enough to extend the analysis. A second reason is more pertinent to the thesis itself.

Hypotheses 3a through 3f tested the optimistic nature of contract specificity. That is, in situations of higher relational risk, it was predicted that a tighter (appropriate) contract would ensure higher fair treatment, but at a cost of higher transaction costs and lower operational flexibility. . Likewise, if relational risk was lower, a looser (appropriate) contract would suffice resulting in lower transaction costs, higher flexibility, and higher levels of fair treatment.

The converse of these predictions was if an inappropriate match existed between relational risk and contract specificity, then lower performance could result. Understanding this converse relationship should shed light on the reasons for the rejection of hypotheses 3a through 3f. The collected data allows for the formulation of such insights.

In order to carry out this analysis, the researcher made use of other information obtained in the course of data collection. This information took the form of responses to two open ended questions posed on the survey instrument. Respondents were asked to give the primary reasons for both the importance of the project to their firm and the primary reasons for the ensuing good or bad relations with their partners. To complement this information, each of the 53 responses for the variables measuring contract specificity,

relational risk, transaction costs, flexibility, and fair treatment were recoded as 1 or 0, generally in the same direction as the original scale. Table 15 highlights the recoding scheme.

Table 15

A SUMMARY RECODING SCHEME FOR SELECTED VARIABLES

Independent and Dependent Variable Names	**A "1" Means:**	**A "0" Means:**
Fair Treatment	Lower	Higher
Flexibility	Lower	Higher
Transaction Costs	Lower	Higher
Relational Risk	Higher	Lower
Contract Specificty	Higher	Lower

This recoding was accomplished by comparing each respondent's "good" alliance example with his "bad" alliance example. In other words, comparisons were made within firms rather than across firms. Given the relative nature of the original scales, the following rules of thumb, reported in Table 15A, were used to categorize or recode each variable as being higher or lower (e.g. 1 or 0).

Table 15A

RECODING RULES OF THUMB

Scenario	Decision Rule of Thumb
1. Ties where the responses are "3".	The choice is made based on the original respondent evaluation of the alliance as a "good" experience or a "bad" experience.
2. Ties where the responses are not "3".	The choice is the same as 1 to 5 scale. Responses closer to "lower" are considered as lower on the recoded scale. Responses closer to "higher" are considered as higher on the recoded scale.
3. Pairs of responses not tied but at the same extreme ends of the scale (e.g., a 1 paired with a 2 or a 4 paired with a 5) .	The choice is the same as 1 to 5 scale. Responses closer to "lower" are considered as lower on the recoded. Responses closer to "higher" are considered as higher on the recoded scale.
4. All other responses.	For each pair, the response closer to the "higher" end of the scale is considered as "higher" on the recoded scale while the response closer to the "lower" end of the scale is considered as lower on the recoded scale.

Once recoded in this manner a different picture emerges of how each alliance compares with the others. An examination of the 53 data observations indicates that deviations take the form of either unpredicted performance or higher than expected contract specificity Unpredicted performance refers to alliances where at least two of the three dependent variables did not match the hypothesized predictions when contract specificity was higher or

lower. Table 16 summarizes the performance of the alliances in terms of their level of relational risk and contract specificity.

Table 16

ANOTHER LOOK AT ALLIANCE PERFORMANCE

	Appropriate Specification	**Inappropriate Specification**	
High Relational Risk	High Contractual Specificity 8 alliances in total 3 as predicted 5 alliances not as predicted A	Low Contractual Specificity 11 alliances in total 11 alliances as predicted B	19 alliances in total 14 as predicted 5 not as predicted
Low Relational Risk	Low Contractual Specificity 12 alliances in total 6 alliances as predicted 6 alliances not as predicted C	High Contractual Specificity 22 alliances in total 6 alliances as predicted 16 alliances not as predicted D	34 alliances in total 12 as predicted 22 not as predicted
			53 alliances in total **26 as predicted** **27 not as predicted**

In general, of the 53 alliances, 26 attained performance as predicted while 27 did not. A significantly higher number of alliances operating in a higher relational risk atmosphere attained performance as predicted than did those operating within a lower relational risk atmosphere. The performance of 14 of 19 higher relational risk alliances was as predicted. However, the story for the lower relational risk settings is not similar. Of 34 such alliances, only 12 occurred as predicted. Cases of unpredicted alliance

performance (22 cases in total) were situated predominantly in the higher contract specificity contexts (Quadrant D). Overall, the model was a better predictor of processual performance in situations of higher risk and situations of lower contract specificity. The reasons for each deviation (or unpredicted performance) and the accompanying analyses are found in Tables 17a, 17b, 17c.

Quadrant A of Table 16 highlights the alliances where performance was not as predicted, when higher relational risk was accompanied by higher (appropriate) contractual specificity. These are the alliances where hypotheses 3a through 3c do not hold. The issue, therefore, is why did an appropriately specified contract not ensure the predicted performance in five of the eight cases within this quadrant?

A response to this question is not straightforward. The number five refers to cases where two of the three processual performance measures were not as predicted. It does not refer to the overall "spirit" of the predicted performance.

To be more specific, in this quadrant, it was predicted that when faced with higher relational risk partners, a tighter contract would ensure higher fair treatment, but at a cost of lower flexibility and higher transaction costs. Overall, this is "positive" performance. What the qualitative analysis found was that in most cases in this quadrant, processual performance was much more "positive" than predicted. In short, in five of the eight cases, higher operational flexibility and lower transaction costs accompanied higher fair treatment.
Only in two of the eight cases was processual performance actually "negative" (lower operational flexibility, lower fair treatment, and higher transaction costs).

Thus when higher contract specificity accompanies higher relational risk partnerships, there is evidence to support Hypothesis 3b. The qualitative evidence, does not however, support Hypotheses 3a or 3c. Indeed, it suggests just the opposite effects.

In the two cases (found in Table 17A), where the unpredicted performance was not in the "spirit" of the hypotheses, respondents described problems in terms of surprising

partner behaviour, an admitted lack of due diligence on their own part regarding partner selection and abilities, and technical incompetence or lack of ability on the part of the partner firm.

This last point is important. In these two cases, a form of risk other that relational risk seemed play a role in unpredicted performance. Technical risk, or the risk associated with completing highly technical and challenging projects was described as impacting upon the partners performance. Although efforts were made to write highly specific contracts, the protection which should have materialized from the added detail, did not occur. In both these cases, the partner firms had extensive experience working with each other. However, this history of cooperation involved technologies which were different from those used in these projects. Competence with one technology was assumed to carry over to a second technology. Again, however, it did not carry over. This suggests the importance of specific aspects of alliance contracts, in this case, technical risk when determining the specificity of any contractual agreement.

Table 17A

EXPLAINING THE DEVIATIONS FROM THE MODEL:
UNPREDICTED PERFORMANCE
WHEN THE CONTRACT IS APPROPRIATE

	Firm	Context	Suggested Reasons for Deviation from Prediction
1.	ISL	ISL was a sub-consultant on an extremely large project with a much larger prime consultant which was using a new technology.	Lack of Due Diligence Technical Risk
2.	Flour Daniel	On a large project, Flour had hired a sub-consultant with a solid reputation which surprised it by not being able to complete its portion of the work.	Lack of Due Diligence Surprise Partner Behaviour

Quadrant C of Table 16 highlights alliances where lower relational risk was accompanied by lower (appropriate) contractual specificity. In six of the twelve cases within this quadrant, performance as predicted in hypotheses 3d through 3f did not hold. Again the question to be answered is why did an appropriately specified contract not lead to the predicted performance? Results derived from Table 17B highlight a lack of due diligence on the part of the respondent firms and a state of surprise regarding partner behaviour in many cases. A situation of high technical complexity also accompanies three of the relationships.

In all of these cases, the partners had written looser contracts or had simply worked together on the basis of verbal agreements. All had also viewed their partners as low risk collaborators, and many had worked together in the past. In one particular case, a partner was forced on the respondent firm by a client. In three of the six cases, the partners' actions simply caught the respondent firms off-guard. In four of the six cases,

the respondents admitted that had they spent more time examining the capabilities and experiences of their partners prior to the contractual agreement, many of the problems would have been avoided.

Again, in some of these alliances other forms of risk reared their heads. In three examples, the respondents described the highly technical and complex nature of the project tasks as playing significant roles in their problems. In three other cases, the sheer magnitude of the revenues and financial risks associated with each project were described as major sources of conflict. A common theme running throughout these unpredicted examples was that when push came to shove, the contractual safeguards were not in place. Consistent with the preceding analysis of Quadrant A's deviations from prediction, the relative levels of financial or technical risk may take precedence when determining the specificity of the contractual agreement especially when relational risk is lower than normal.

When other forms of higher risk (technical, financial, strategic) were not present, processual performance occurred as predicted. Partners experienced feelings of higher fair treatment, higher operational flexibility, and lower transaction costs. In these situations, the qualitative evidence does provide some support for Hypotheses 3d to 3f.

Table 17B

EXPLAINING THE DEVIATIONS FROM THE MODEL:
UNPREDICTED PERFORMANCE
WHEN THE CONTRACT IS APPROPRIATE

	Firm	Context	Suggested Reasons for Deviation from Prediction
1.	Maxim	Maxim was a sub - consultant and had worked with the prime consultant in the past. Too loose a contract was written and when technical disagreements arose, Maxim was forced to defend itself with little protection.	Lack of Due Diligence Surprise Partner Behaviour Technical Risk
2.	Reid Crowther	Reid Crowther was the prime-consultant and had experience working with the sub-consultant. The sub-consultant had little experience with this technology and did not want to spend money to learn it.	Lack of Due Diligence Technical Risk
3.	Keen	Keen was a sub-consultant and had worked previously with the prime-consultant. Untimely personnel changes within both partner organizations and uncompromising personal behaviour by the partner's project manager appeared to set off the problems.	Surprise Partner Behaviour
4.	Associated Engineering	An alliance partner's relationship with the client went bad. It was the first project of this type for the client and one of high risk for it.	Surprise Partner Behaviour Strategic Risk
5.	Paine	This was a high revenue project performed as a sub-consultant for a regular partner, during a slow time of the year, with a handshake for a contract. The prime-consultant did not like the quality of the work performed by Paine. Paine decided to simply walk away from the contract.	Lack of Due Diligence Due Diligence Financial Risk
6.	Agra	Agra participated in a high revenue project performed on the basis of an unsolicited proposal as opposed to a contract. The project included the use of new technology and sloppy record-keeping by Agra.	Lack of Due Diligence Technical Risk Financial Risk

Quadrant D of Table 16 highlights 16 alliances out of 22 where performance did not occur as predicted. In these cases, however, partners expressed satisfaction with the levels of transaction costs, flexibility and fairness. In other words, when lower relational risk was accompanied by tighter than expected contractual specificity, the relationships worked out well.

One reason for this unpredicted processual performance carries over from the statistical analysis of these hypotheses. As noted earlier, the general effect of tighter contract specificity is to increase perceptions of operational flexibility and fair treatment.

This, of course, runs counter to the "spirit" of the predicted performance relationships. In twelve of the sixteen unpredicted cases, perceptions of both operational flexibility and fair treatment were higher than normal. In the remaining four cases, perceptions of at least one of these two processual performance measures were higher than normal. Further, in eleven of these cases, perceived transactions costs were lower than normal. Once again, the level of transaction costs appears to be a benefit, not a cost of higher contract specificity.

Most organizational observers might, however, assume it reasonable that firms which enter into alliances, do so with the desire of maintaining good working relations. Thus an analysis of prediction failure in this quadrant should focus instead on why the contract was written in a tighter manner when the model predicted looser specificity. The analysis (found in Table 17C) indicates a number of common themes among the cases. These relatively unrisky relationships occurred in projects involving any or all of the following three dimensions: extreme technical complexity (technical risk), high visibility (reputational risk), or an extremely high dollar value (financial risk). In these cases, lower relational risk appeared to be secondary in importance in deciding contract specificity when higher degrees of these other forms of risk were present. Contract specificity did protect against risk. The risk, however, was not relational.

One further factor arose in the analysis. In many of the cases, the respondent firm was a sub-contractor. Thus, a power differential between partners may also be important in explaining these deviations from the model. However, this may not be as important a factor as those related to the other forms of risk. The reason for this is that the conceptual measures of this study are all relative, not absolute, in nature. Respondents were asked to compare their alliance experiences with similar others. Thus, a reasonable assumption is that in most cases, experiences as prime-consultants were not compared to experiences as sub-consultants.

Table 17C

EXPLAINING THE DEVIATIONS FROM THE MODEL:
EXAMPLES OF UNPREDICTED PERFORMANCE
WHEN THE CONTRACT IS INAPPROPRIATE

	Firm	Context	Why was the Contract Specificty Tighter than Predicted
1.	Hemisphere	Hemisphere was a sub-consultant on a high revenue project.	Power Differential Financial Risk
2.	Reid Crowther	Reid Crowther participated in an extremely high profile project with a foreign partner using a new technology.	US. Partner Technical Risk Visibility
3.	UMA	UMA is an extremely large firm with in- house legal counsel and standard, tight contracts. This particular project involved high revenues and new technology.	Firm Size Financial Risk Technical Risk
4.	Stanley	Stanley is an extremely large firm with in- house legal counsel and standard, tight contracts. This particular project involved high revenues and was of a high profile nature.	Firm Size Financial Risk Strategic Risk Visibility
5.	Agra	Agra was a sub-consultant on this high revenue project with a larger partner.	Power Differential Financial Risk
6.	Golder	Golder is a large firm with in-house legal counsel and standard, tight contracts. This particular project involved high revenues and new technology.	Firm Size Financial Risk Technical Risk
7.	Reid Jones Christofferse n.	RJC was a sub-consultant on this high revenue project using a new technology.	Power Differential Financial Risk, Technical Risk
8.	Paine	Paine was a sub-consultant on this high revenue project.	Power Differential Financial Risk
9.	Thurber	Thurber was a sub-consultant on this high revenue project.	Power Differential Financial Risk
10.	Agra	Agra was a sub-consultant on this high revenue project.	Power Differential Financial Risk
11.	Sproule	Usually a sub-consultant, Sproule acted as the prime-consultant on this project for a new client in a new market on a high revenue project.	Strategic Risk Financial risk
12.	Agra	Agra was a sub-consultant on this large project working for a new client.	Power Differential Strategic Risk

Quadrant B of Table 16 highlights those alliances where higher relational risk was not matched with a higher (appropriate) level of contract specificity. Not surprisingly, all of the 11 alliances which fall into this quadrant experienced performance almost as predicted. Perceptions of transactions costs were higher and those of fair treatment were lower. Operational flexibility was also perceived as being lower by the respondents. This was not in accord with the model's prediction. Thus, in this situation, an inappropriately specified contract appeared to be linked to poor performance. This completes the qualitative analysis of hypotheses 3a through 3f.

In sum, after recoding the variables and analyzing the data by qualitative means, a number of relationships appear evident. When looser contract specificity was matched with perceptions of higher relational risk, the processual performance of alliance partners was as predicted with the exception of operational flexibility. In these cases, perceptions of operational flexibility and fair treatment were lower than normal while perceptions of transaction costs were higher than normal.

When looser contract specificity was matched with perceptions of lower relational risk, and other forms of higher risk were not present, the processual performance of alliance partners was as predicted. In these cases, perceptions of operational flexibility and fair treatment were higher than normal while perceptions of transaction costs were lower than normal. However, when other forms of higher risk were present, the protection afforded by a looser contract was inadequate, leaving partners with perceptions of lower fair treatment, lower operational flexibility and higher transactions costs. In these latter cases, an admitted lack of due diligence in partner selection by the respondent firm and surprise behaviour by the partner firm were evident.

When higher contract specificity was matched with perceptions of lower relational risk, the majority of cases involved processual performance which was not as predicted. In these cases, perceptions of operational flexibility and fair treatment were higher than

normal while perceptions of transaction costs were lower than normal. The analysis suggested that the presence of other forms of higher risk (technical, financial, strategic) served to ensure the writing of a tighter than predicted contract.

When higher contract specificity was matched with perceptions of higher relational risk, the majority of cases involved processual performance which was not as predicted. Again, in these cases, perceptions of higher operational flexibility and higher fair treatment accompanied perceptions of lower transaction costs. The analysis also suggested that the presence of other forms of higher risk (technical, financial, strategic) served to ensure the writing of a tighter than predicted contract. In those cases where processual performance was not consistent with the "spirit" of the predictions, an admitted lack of due diligence in partner selection by the respondent firm and surprise behaviour by the partner firm were evident.

Thus, when tested by qualitative, non-statistical means, there is some evidence to support Hypotheses 3b, 3d, 3e, and 3f. Unfortunately, this analysis does not lend to itself to causal explanation but does go a long way towards clarifying the link between relational risk (and other forms of risk) and contractual specificity. Table 18 summarizes the deviations from predictions and the proposed links to performance.

Table 18

SUMMARY OF DEVIATIONS FROM PREDICTIONS AND PROPOSED LINKS TO PERFORMANCE

	Appropriate Specification	**Inappropriate Specification**
High Relational Risk	*High Contractual Specificity* **Unpredicted deviation was poor performance** Suggested reasons for these deviations: 1. High Technical Risk 2. Surprise Partner Behaviour 3. Lack of Due Dilgence in Partner Selection A	*Low Contractual Specificity* **No deviations from the predicted performance** B
Low Relational Risk	*Low Contractual Specificity* **Unpredicted deviation was poor performance** Suggested reasons for these deviations: 1. High Technical Risk 2. Surprise Partner Behaviour 3. Lack of Due Dilgence in Partner Selection C	*High Contractual Specificity* **Unpredicted deviation was a tight contract** Suggested reasons for this deviation: 1. High Financial Risk 2. A Power Differential Among Partners 3. High Technical Risk 4. High Reputational Risk 5. Use of Standard Contracts Dictated by Large Firm Size D

In order to increase confidence in these findings, one further step was followed. The existence of a linear association between each of the dependent variables (fair treatment, flexibility, transaction costs) and contract specificity was explored. Table 19 contains the Pearson correlation coefficients for each of these three relationships and their corresponding p-values. The correlation coefficients of fair treatment (r = 0.395) and (r = 0.413) operational flexibility are statistically significant while the correlation coefficient of transaction costs is statistically insignificant. It appears that perceptions of higher contract specificity are associated with perceptions of higher fair treatment and again, somewhat surprisingly, operational flexibility.

Table 19

PEARSON CORRELATIONS OF PERFORMANCE WITH CONTRACT SPECIFICITY

Dependent Variables	Pearson Correlations	P-values
Fair Treatment	0.395	0.003**
Flexibility	0.413	0.002**
Transaction Costs	-0.060	0.668

*p<.05. **p<.01. ***p<.001.

Discussion of the Results of the Tests of Hypotheses 4a-4f

The estimated regression coefficients for these hypotheses are given in Table 20 below. The ratio of each estimate to its standard error determines the t-statistic for testing the null hypothesis that the true regression coefficient is zero. The t-values and their corresponding p-values are also given in the table.

Hypothesis 4a: *The greater the experience of a firm, the lower the perception of relational risk among alliance partners.*

The regression coefficient for this relationship (reported in Table 20) is not statistically significant ($\beta = 0.085$). There appears to be no linear relationship between firm experience and relational risk. **The hypothesis is not supported.**

The two most obvious reasons for the lack of statistical significance relates to the "possible" normality of the alliance tasks and the well known reputation of most of the partners firms in this domestic context. The latter rationale relates to Eisenhardt and Schoonhoven's (1994) explanation of alliance formation. One strong reason for a partner's inclusion in such an alliance is simple membership in a social network of companies or executives. As Ring and Van de Ven (1992) suggest, the potential reputational effects of opportunistic behaviour may alone serve to safeguard any relationship. In domestic markets where firms and executives are often well known, reputational problems may serve to drive away future business and current colleagues.

The former point refers to the strong possibility that most of the sampled alliances involved work on relatively "normal" not "risky" projects. Despite an attempt to capture "important" projects in the sample, most executives would probably agree that ventures in foreign geographic markets might be more appropriate examples. The range of experiences of both the firm itself and any partners are probably far better known and less debatable in this context than on a project involving a new technology or entrance into a new business market.

In short, experiences involving "normal" projects may simply not matter that much when rating prospective partners.

Hypothesis 4b: *The higher the level of due diligence, the lower the perception of relational risk among alliance partners.*

The regression coefficient for this relationship (reported in Table 20) is not statistically significant ($\beta = 0.060$). There appears to be no linear relationship between due diligence and relational risk. **The hypothesis is not supported.**

The justification for the inclusion of this hypothesis had its basis in principal agency theory. Principal agency theory suggests that firms will seek to reduce the behavioural uncertainty of agents by investing in information systems or by contracting on the results of the agent's behaviour. Accordingly the relative level of due diligence should provide an indication of the level of uncertainty as to whether information systems or performance contracts should be used. Unfortunately, the local context of this study (domestic alliances involving Alberta operating consulting engineering firms) suggests that few of the alliance relationships would have necessitated a higher than normal level of due diligence in partner or project selection given that most firms participating firms would be known to each other.

Hypothesis 4c: *The higher the level of organizational asymmetry, the higher the perception of relational risk among alliance partners.*

As noted in Chapter 3, the original scale constructed to measure organizational asymmetry was decomposed into three separate scales measuring surprise, risk asymmetry, and size asymmetry respectively.

The regression coefficient for surprise (reported in Table 20) is statistically significant ($\beta = -0.275$). There appears to be a linear relationship between surprise and

relational risk. Firms which perceive relational risk to be low stand a very good chance of being surprised by the behaviour of their partners.

The regression coefficient for risk asymmetry is also statistically significant (β = 0.185) if 0.10 is accepted as an appropriate cut-off. Thus, there appears to be a linear relationship between risk asymmetry and relational risk. Differences in the importance of an alliance to each partner increases relational risk.

The regression coefficient for size asymmetry (reported in Table 20) is not statistically significant (β = 0.022). There appears to be no linear relationship between size asymmetry and relational risk.

A possible explanation in this case is the probable awareness of size differences, and hence, caution of partners in such relationships. As noted earlier, executives of smaller firms should be more guarded in their dealings with larger partners. Obvious conflicts will be avoided ahead of time by simply not entering into alliance relationships. On the other other hand, fearing a lack of partner competence due to size, larger partners might simply opt for longer term relationships with fewer smaller sized partners and work to improve the quality of their performance. By knowing each other in more detail, comfort levels on both sides should be enhanced and size will cease to be problematic.

Despite the insignificance of the statistic measuring the impact of size asymmetry, there is strong evidence to suggest that higher perceived organizational asymmetry accompanies higher relational risk. **The hypothesis is supported.**

Hypothesis 4d: *The greater the geographical proximity, the lower the perception of relational risk among alliance partners.*

The regression coefficient for this relationship (reported in Table 20) is not statistically significant (β = 0.067). There appears to be no linear relationship between partner dependence and relational risk. **The hypothesis is not supported**.

At first glance this is a surprising result. Selected researchers (Daft & Macintosh, 1984; Hakansson & Johanson, 1987) suggest that the existence of strong personal networks and close personal communication outside of formal organizational control systems should improve the coordination and management of uncertain tasks. Conversely, a lack of the above, as might be common in relationships occurring over far distances, should be linked to higher relational risk. One explanation for the lack of statistically significant findings is the close geographical proximity of the entire population of alliance participants. This is a study of domestic, Alberta situated projects; therefore most partner executives probably know each other on a formal or informal basis. Thus, the sample of alliances may be biased towards close proximity relationships.

Hypothesis 4e: *The greater the dependence of a partner on other firms, the higher the perception of relational risk among alliance partners.*

The regression coefficient for this relationship (reported in Table 20) is not statistically significant (β = -.083). There appears to be no linear relationship between partner dependence and relational risk. **The hypothesis is not supported.**

Two strong possibilities exist to explain this result. First, as noted in the methodology chapter, project based alliance relationships are a normal form of business in this industry. Partners may simply be accustomed to this risky add-on and accept the competence of partners to manage this twist. Second, as Shanteau and Harris (1991) suggest, agency theory may simply overstate the willingness of firms to break contractual agreements.

Table 20

RESULTS FOR THE REGRESSION OF THE WARNING SIGNALS ON RELATIONAL RISK

Independent Variables		**Relational Risk**	
	Beta	t	p(value)
Experience	0.085	0.610	0.54
Due Diligence	0.060	0.470	0.64
Risk Asymmetry	-0.185	-1.196	0.06*
Size Asymmetry	0.022	0.264	0.79
Surprise	-0.275	-3.848	0.00****
Geographical Proximity	0.067	1.233	0.22
Partner Dependence	-0.083	-1.194	0.23

*p<.10. **p<.05. ***p<.01. ****p<.001.

The F-statistic for the overall regression (reported in Table 20A) is statistically significant at the 0.001 level indicating a significant overall regression model. An R-square value of .394 indicates that combined, these seven variables explain just over thirty nine percent of the variance in relational risk.

Table 20A

RESULTS FOR THE REGRESSION OF THE WARNING SIGNALS ON RELATIONAL RISK: F-STATISTIC

	Relational Risk	
Independent Variables		
	R2	F (ΔR2)
Full Set	0.394	4.186***

*p<.05. **p<.01. ***p<.001

This completes discussion of the results of this study. The next chapter concludes the dissertation by summarizing the main arguments and findings, highlighting topics of further research, and discussing the managerial and theoretical implications.

Chapter 5

SUMMARY AND CONCLUSIONS

This chapter concludes the dissertation study. The results of the null hypotheses tests are first summarized. Next, the theoretical and managerial implications of the findings are discussed. Following this, the limitations of the study are highlighted and suggestions provided for future research. The chapter is then concluded with an overview of the overall study.

Summary of the Null Hypotheses Tests

Hypotheses 1a -1f:

Hypothesis 1a: *It was predicted that higher perceived relational risk would accompany perceptions of lower operational flexiblity among alliance partners.*

Support was found for Hypothesis 1a. Perceived relational risk is negatively correlated with perceived operational flexibility.

Hypothesis 1b: *It was predicted that higher perceived relational risk would accompany perceptions of lower fair treatment among alliance partners.*

Support was found for Hypothesis 1b. Perceived relational risk is negatively correlated with perceived fair treatment.

Hypothesis 1c: *It was predicted that higher perceived relational risk would accompany perceptions of higher transaction costs among alliance partners.*

Support was found for Hypothesis 1c. Perceived relational risk is positively correlated with perceived transaction costs.

Support for these hypotheses confirms the starting assumption that relational risk is a significant problem: hence the concern is to examine how far contract specificity is used to resolve the problem.

Hypothesis 2:

Hypothesis 2: *It was predicted that higher perceived relational risk would be accompanied by higher contractual specificity among alliance partners*

Support was not found for Hypothesis 2. The correlation between relational risk and contract specificity is not statistically significant. There does not appear to be a linear association between these two variables.

The rejection of this hypothesis does not support the assumption that contract specificity is seen by managers as a solution to relational risk. However, this does provide an opportunity to strengthen the model by incorporating a separate series of issues (summarized in Table 21 below). These issues refer to the possible reasons for the statistically insignificant correlation. First, managers may not be aware of relational risk as a problem. Second, they may view it as a problem but use mechanisms other that the written contract to protect themselves. Finally, other forms of risk simply take precedence when determining the specificity of the written alliance agreement.

Table 21

SUGGESTED REASONS WHY NO STATISTICALLY SIGNIFICANT CORRELATION EXISTS BETWEEN RELATIONAL RISK AND CONTRACT SPECIFICITY

Managers may not be aware of relational risk as a problem.
Other protective mechanisms may be used.
Other forms of risk may take precedence.

The first suggestion is that managers may not be aware of relational risk as a problem. From this perspective relational risk may be relative in nature. It is seen as a problem and project partner relationships will be entered into only if a certain "comfort zone" exists. Firms whose relational risk level falls outside of this comfort zone will simply not be made partners. A second possibility is that managers routinely misdiagnose the level of relational risk. The qualitative analysis carried out to explore the results of Hypotheses 3a-3f provides some evidence to support this assertion. On the other hand, relational risk may be well understood, but in many cases, Consulting Engineering firms are forced to take on a worrisome partner(s) to please, and obtain project work from clients.

A final possibility is that relational risk is not all that important a concern for alliance partners. A number of theoretical arguments support this idea but run counter to much of the logic of this dissertation. First, as most firms prefer to deal with others of solid repute and faced with the high costs of court adjudication, few organizations will be content to rely on institutional (law courts, third party arbitrators) arrangements to guard against trouble (Williamson, 1983; Granovetter, 1985) . Indeed, recourse to them typically leads the parties to

end their relationship (Ouchi, 1984). In other words, firms will prefer to work things out themselves and thus rely on private ordering by devising self enforcing contracts (Williamson, 1983; Parkhe, 1993; Ring & Van de Ven, 1994).

Second, when interests do diverge, most firms will stick to a contractually signed agreement or attempt to renegotiate (Ring & Van de Ven, 1994) rather than break off the relationship. This runs counter to agency theory where principal-agent contracts are viewed as volitional in that agents are able to exit without costs and contract with other principals if their self-interests are not fulfilled by the arrangement. In theory this may be true. However, in business relations, reputational effects may forestall moves of this type (Macaulay, 1963). Firms that develop a reputation for leaving alliance partners "in the cold" will not be perceived positively by other firms as potential business partners. A number of interviewed executives supported this assertion. When queried as to why his firm just didn't "up and leave" when relationships in one alliance became rocky, one manager responded "if we did no one would work with us in the future."

Third, despite the existence of trusting relations between key decision makers, firms may bind themselves contractually simply out of prudence. "Even though individuals may (or may not) rely on trust in their `qua persona' relationships, they may be unable to do so when acting as agents for their organization" (Ring & Van de Ven, 1994: 96). Although organizations may prudently require their agents to employ "lifejackets" (contracts) in lieu of exclusive reliance on trust (Ring & Van de Ven, 1994) those same contracts are often thought to be unnecessary because of a non-legal sanction implying that commitments are to be honoured in almost all situations (Macaulay, 1963).

Fourth, consistent with the arguments of structural contingency theory, (Pugh, Hickson, Hinings, MacMillan; 1965), contract specificity may be dependent upon firm size, not relational risk. Larger firms may naturally use higher specificity in the contractual agreements than

smaller firms. For some firms, the specificity of their alliance contracts may remain constant while the levels of relational risk vary by project.

Fifth, agency theory may overestimate an agent's willingness to breach a contract (Shanteau & Harrison, 1991). Many of the insights of agency theory originate in micro level studies of individuals and may not be appropriate to larger organizations. In this regard individuals are more prone to shirking than organizations (Rousseau & Parks, 1993).

Sixth, transactions costs may be prohibitively expensive. Monitoring costs implied by a high degree of contractual safeguards may absorb much of the expected benefit of the alliance so that the value created by exchanges involving actors of questionable reputation is significantly reduced (Hill, 1990; Parkhe, 1993).

Seventh, a firm's participation in an alliance or hierarchy may in itself decrease relational risk by generating trust (Rousseau & Parks, 1993). In this case, arms length business transactions are transformed into long term open ended contracts or relationships. These longer term contracts, which take the form of hierachies or alliances, substitute for the contracts of agency theory to reduce opportunism by promoting social ties (networks of personal relations) which engender trust (Granovetter, 1985; Rousseau & Parks, 1993). These trusting relationships in turn serve to reduce transaction costs associated with monitoring (Zucker, 1986) through social and normative structures (Rousseau & Parks, 1993). Because of these ties many executives prefer to keep relations simple. Referring to highly specific contracts, Macaulay's (1963) comments highlight the notion that the preparation of contractual safeguards may also have detrimental effects on the working relationships between partners.

> "Some businessmen (women) object that in such a carefully worked out relationship one gets performance only to the letter of the contract. Such planning indicates a lack of trust and blunts the demands of friendship, turning a cooperative venture into an antagonistic horse trade" (Macaulay, 1963).

Eighth, extending the logic of the above point, formal ties may be replaced by informal agreements the longer the duration of the interfirm relationship. One pair of theorists suggest that "informal psychological contracts increasingly .....substitute for formal legal contracts in high commitment relations because of the parties ability to rely on trust that stems from prior fair dealing" (Ring & Van de Ven, 1994: 94).

Table 22 below, summarizes the potential reasons why managers may not consider relational risk a problem.

Table 22

REASONS WHY RELATIONAL RISK MAY NOT MATTER TO ALLIANCE PARTNERS

Reason	Source
1. Financial costs of litigation.	Williamson, 1983 Granovetter, 1985
2. Reputational costs of opportunistic behaviour.	Ring & Van de Ven, 1994
3. Generalized overestimation of the willingness to breach a contract.	Shanteau & Harrison, 1991
4. Prohibitive transaction costs which enhance the refusal to work with worrisome partners.	Hill, 1990 Parkhe, 1994
5. Propensity of ongoing alliance participation and social ties to increase trust.	Granovetter, 1985 Rousseau & Parks, 1993
6. Propensity of ongoing interfirm cooperation to decrease the need for formal agreements.	Ring & Van de Ven, 1994 Gulati, 1995
7. Propensity to write highly specific contracts simply out of prudence.	Ring & Van de Ven, 1994
8. Propensity of organizational size to increase formality in relationships.	Pugh, Hickson, & Hinings, 1965.

A second suggestion as to why Hypothesis 2 was not supported is that contract specificity may be only one of a number of protective mechanisms used to guard against

relational risk. Both existing theory as well as other data collected in the course of this study provide evidence to suggest the existence of alternative protective mechanisms.

Qualitative data collected for this dissertation, but not analyzed, points to the possible existence of at least seven other protective mechanisms for managing relational risk.

Consensus Achievement is an alternative mechanism which refers to the actual process of arriving at a written agreement. From this perspective, achieving an understanding among the partners as to each other's overall objectives, the project scope, the project budget and the project schedule, rather than the actual written document, takes precedence as a protective mechanism.

Deflection describes a second alternative mechanism. When faced with accepting a worrisome partner in order to secure project work, a frequently used tactic is to align the partner contractually with the project client or owner.

Threat is a third potential form of protection useful in situations where a partner is forced upon a firm. Threat refers to a promise to never again work with that partner should problems arise during the operational life of the alliance.

Along with contract specificity, these three protective mechanisms are useful prior to commencing project work for a client. Four others may also play a role once the agreement with a project client is signed and work commences with the worrisome partner.

Persuasion refers to managerial efforts which may be useful when alliance relationships become problematic. These efforts include the use of common management practices such as increasing communication between the partners, meeting at a face to face level, passing decision making responsibility up the hierarchy of each partner firm, maintaining, monitoring, and making partners aware of the existence of written "paper trails," etc.

Hand Holding is the term used to describe a protective mechanism for dealing with a partner forced on a firm by the project client or owner. In this case the firm would allocate, before hand, extra manpower and resources to monitor the work of the worrisome (and often

incompetent) partner. In a worst case scenario, the work of the partner would simply be completed by the Consulting Engineering firm.

Circumvention refers to a mechanism that can be used to protect against high relational risk partners. This would normally be used by a sub-consultant when problems arise with a partner and would involve appealing directly to the project client or owner for a solution to the impasse. It is in itself a high risk form of potential protection as its use may backfire on the firm by angering both the project client and the partner.

Exit is a verb used to describe a final protective mechanism useful as a last resort when the financial integrity of the firm is at stake. The use of such a mechanism is probably not frequent as it most likely decreases future business opportunities with that partner and the project client.

Alternative theoretical perspectives also provide reasons to suggest the existence of other protective mechanisms. Using the umbrella concept of alliance control, three categories are evident: the scope, extent, and means (Yan & Gray; 1994). Scope refers to the areas of the alliance operation in which control is exercised. The use of partner selection criteria (Geringer, 1986) during the negotiation phase of an alliance represents an example of scope control. The choice of financial governance structure (Killing, 1983; Lecraw, 1984) represents the extent or degree to which partners exercise control over the alliances. Finally, the organizational structure (Schaan, 1983) of the alliance and all the associated roles, rules, regulations, procedures, and responsibilities associated with it represent the means of control.

A means to integrate these theoretical alternatives with the seven protective mechanisms identified in this study's qualitative analysis is to place these latter within the domain of the theoretical "means of control" category, referring to them as "behavioural" rather than "structural" means. Contract specificity may also be placed in such a framework by referring to it as a "contractual" means of control or protective mechanism. Table 23 below summarizes this categorization scheme.

Table 23

AN OVERVIEW OF PROJECT BASED STRATEGIC ALLIANCE PROTECTIVE MECHANISMS

Scope of Control	Extent of Control	Means of Control
• Partner selection criteria	• Financial governance structure	• Structural Organizational and managerial structure • Behavioural Consensus Achievement Deflection Threat Persuasion Hand Holding Circumvention Exit • Contractual Contract specificity

A third and final suggestion as to why contract specificity and relational risk do not correlate is that other forms of risk may take precedence over relational risk when determining the make up of a contract. Although not empirically tested, the qualitative analysis conducted to test Hypotheses 3a to 3f suggests the equal importance for managers of high relational and high task (financial, reputational, and technological) forms of risk. This analysis also suggests that when high task forms of risk accompany

low relational forms of risk, the former will take precedence with managers when constructing protective mechanisms.

To summarize, support was not found for Hypothesis 2. Three reasons were put forward to explain why no significant correlation was found between relational risk and contract specificity. First, managers may not be aware of relational risk as a problem. Second, managers may make use of means other than contract specificity to protect themselves from worrisome partners. Finally, other forms of risk may simply take precedence over relational risk when alliance contracts are written.

Hypotheses 3a to 3f attempt to shed further light on this issue by relating the interaction of these two variables to perceived processual performance. Contract specificity may indeed serve as a protective mechanism against relational risk. However, their relationship may be more complicated than a simple correlation. This issue is adressed next.

Hypotheses 3a-3f:

H3a: *Transaction costs will be higher when higher contractual specificity accompanies situations of higher perceived relational risk.*

Statistical support was not found for this hypothesis.

H3b: *Fair treatment will be higher when higher contractual specificity accompanies situations of higher perceived relational risk.*

Statistical support was not found for this hypothesis. Perceptions of higher fair treatment were associated with perceptions of higher contract specificity when higher relational risk was removed from the equation. The use of tighter contracts does appear to increase processual performance when defined in terms of perceptions of fair treatment.

H3c *Operational flexibility will be lower when higher contractual specificity accompanies situations of higher perceived relational risk.*

Statistical support was not found for this hypothesis. Perceptions of higher operational flexibility were associated with perceptions of higher, not lower, contract specificity when relational risk was removed from the equation. The use of tighter contracts appears to increase processual performance when defined in terms of perceptions of operational flexibility.

H3d: *Transaction costs will be lower when lower contractual specificity accompanies situations of lower perceived relational risk.*

Statistical support was not found for this hypothesis.

H3e: *Fair treatment will be higher when lower contractual specificity accompanies situations of lower perceived relational risk.*

Statistical support was not found for this hypothesis. However, the use of looser contracts does appear to decrease perceptions of fair treatment when relational risk is removed from the equation.

H3f: *Operational flexibility will be higher when lower contractual specificity accompanies situations of lower perceived relational risk.*

Statistical support was not found for this hypothesis. Surprisingly, however, the use of looser contracts appears to decrease perceptions of operational flexibility when relational risk is removed from the equation..

Another Look at Hypotheses 3a-3f:

In order to understand the reasons for the lack of statistical support of Hypotheses 3a-3f, a qualitative analysis was undertaken. After recoding the variables, a number of relationships became evident.

When looser contract specificity was matched with perceptions of higher relational risk, the processual performance of alliance partners was as predicted with the exception of operational flexibility. In these cases, perceptions of operational flexibility and fair treatment were lower than normal while perceptions of transaction costs were higher than normal.

When looser contract specificity was matched with perceptions of lower relational risk, and other forms of higher risk were not present, the processual performance of alliance partners was as predicted. In these cases, perceptions of operational flexibility and fair treatment were higher than normal (as per Hypotheses 3e and 3f) while perceptions of transaction costs were lower than normal (as per Hypothesis 3d). However, when other forms of higher risk were present, (for example, a new technology was being used or the financial risk of the project was very high), the protection afforded by a looser contract was inadequate, leaving partners with perceptions of lower fair treatment, lower operational flexibility and higher transactions costs. In these latter cases, an admitted lack of due diligence in partner selection by the respondent firm and surprise behaviour by the partner firm were evident.

When higher contract specificity was matched with perceptions of lower relational risk, the majority of cases involved processual performance which was not as predicted. In these cases, perceptions of operational flexibility and fair treatment were higher than normal while perceptions of transaction costs were lower than normal. It appears the presence of other forms of risk pushed firms to write tight contracts even though the partners were not of a worrisome variety. The analysis suggested that the presence of

other forms of higher risk (technical, financial, strategic) served to ensure the writing of a tighter than predicted contract.

When higher contract specificity was matched with perceptions of higher relational risk, the majority of cases involved processual performance which was not as predicted. Again, in these cases, perceptions of higher operational flexibility and higher fair treatment (as per Hypothesis 3b) accompanied perceptions of lower transaction costs. Although not as predicted, the positive nature of this performance was actually consistent with the "spirit" of the thesis. The overall theme of the dissertation is that the specificity of the alliance contract may serve as an effective means to protect firms from uncertain partner behaviour. In those cases where processual performance was not consistent with the "spirit" of the predictions, an admitted lack of due diligence in partner selection by the respondent firm and surprise behaviour by the partner firm were evident.

These qualitative results provide strong evidence to support many of the assertions found in Hypotheses 3a-3f. Unfortunately, this analysis does not lend to itself to causal explanation, although it does go a long way towards clarifying the link between relational risk (and other forms of risk) and contractual specificity. In sum, when tested by qualitative, non-statistical means, there is some evidence to support Hypotheses 3b, 3d, 3e, and 3f.

Hypotheses 4a -4e:

Only one of the hypotheses, that being 4c (Organizational Asymmetry) was supported within this set. The difference in importance of the project to each partner, and a firm's awareness of the potential for surprise behaviour by a partner appear to be predictors of relational risk. A firm's experience, the level of due diligence expended in partner and project selection, the geographical proximity of decision making offices of the

partners and the dependence of alliance participants on outside firms, were not found to be predictors in this regard.

The lack of support for most of these hypotheses is somewhat surprising. Specific explanations for the results of each hypothesis were offered in the previous chapter. However, in general, a number of possible reasons exist to explain the lack of support for Hypotheses 4a, 4b, 4d, and 4e. First, the overall sample size of 53 observations is relatively small. Although, the proposed model is a good fit with the data and the seven independent variables explain thirty-nine percent of the variance of relational risk, a larger number of observations may bring out other main effects of the regression.

Second, related to the issue of partner familiarity is that of relative risk assessment competence. The surveyed firms may simply have been quite effective at selecting out high risk partners in their own back yards. An industry wide familiarity of potential partners for domestic alliances may cause the overall population of domestic project relationships to be less risky, in relational terms, than those of international projects where partners are often not as well known. Along with their effect on the relative extremes of relational risk found in this study's sample of alliance relationships, these same arguments might serve to nullify the impact of the geographical proximity construct on perceptions of relational risk.

Third, respondents were asked to provide information regarding alliances where ex-post they perceived the partner relationship in a positive or negative manner. Had respondents been asked, prior to the start of specific project relationships, to provide information regarding partners, the data might have provided more support for the models predictor variables.

Finally, respondent fatigue may have played a role. The measurement scales relating to this null hypothesis were positioned at the end of of the survey. As the average

time for survey completion exceeded 30 minutes in most cases, respondents may simply have become tired with the task.

To summarize, support was found for hypothesis 4c. The difference in importance of the project to each partner, and a firm's awareness of the potential for surprise behaviour by a partner appear to be the strongest predictors of relational risk.

Theoretical Implications

This study furthers our understanding of the management of consulting engineering firms in general and the following four areas as they relate to project based strategic alliances in this industry: alliance performance, the importance of agency theory, the weakness of transaction cost economics, and the warning signals of relational risk.

Using the context of the consulting engineering industry, a unique insight is introduced regarding ***the performance of strategic alliances.*** This study empirically demonstrates the importance and existence of processual performance dimensions. Existing research has focused almost exclusively on the endstates or results of alliance participation, be they subjective or objective appraisals of satisfaction, or the attainment of strategic, marketing, or financial objectives. Theoretical insight has also suggested the importance of examining performance in terms of learning or knowledge acquisition objectives, efficiency targets or strategic goals (Kogut, 1988). This study draws attention to previously ignored theoretical performance concerns relevant to managers on a day to day basis - perceptions of transaction costs, operational flexibility and fair treatment.

The study also provides partial empirical support for ***the importance of agency theory in furthering our understanding of the management of alliances.*** At their core, the hypotheses of this dissertation are a test of agency theory. As described in Chapter 2, an underlying aim was to determine, in cases of incomplete information or uncertain partner behaviour, whether contracts which adopted predominantly behavioural or outcome orientations would be more effective in managing alliance partners. Tighter written agreements served as proxies for behavioural contracts while looser written agreements took the place of outcome based contracts. In general, it was also suggested that when the uncertainty of partner behaviour (relational risk) was low, outcome based contracts would predominate. Further, when the uncertainty of partner behaviour was high, behaviourally oriented contracts would predominate.

The findings of this study suggest a choice of contract when information is incomplete. In cases of high uncertainty (high relational risk), behaviourally oriented contracts are more effective while outcome oriented contracts are less effective. In cases of low uncertainty (low relational risk, when other forms of risk are not present) outcome oriented contracts are less effective.

However, these findings provide only partial support for the utility of agency theory in the context of project based strategic alliance management. The insignificance of the empirical results of Hypotheses 2 and 3 suggest that other forms of protection, besides the contract, may be important when linking the insights of agency theory to alliance management.

The same point can be made when discussing ***the connection of transaction cost economics (TCE) to alliance management.*** Clearly, the statistically insignificant results of Hypotheses 2 and 3 both reinforce Williamson's (1985) assertion regarding the incomplete nature of contracts and the impossibility of their enforcement to cover all possible outcomes. However, the relatively low R-squared statistics for the regressions testing Hypotheses 3a to 3f and the insignificance of the statistical result for Hypothesis 2 also point out the need for TCE adherents to incorporate protective mechanisms other than the written contract in their theories.

Another important point relates to Ring and Van De Ven's (1992) conceptual efforts to improve TCE theory by moving beyond the market - hierarchy dichotomy when addressing hybrid or alliance forms of organization. Their suggestion was that market type contracts would be most effective for transactions involving a low reliance on trust and low levels of interfirm risk. On the other hand, hierarchies would be most effective in alliance situations where the ability to rely on trust was also low but the risk of the deal was high.

Ring and Van de Ven's (1992) contribution was to describe in conceptual terms two hybrid governance structures or forms of alliance contract useful in situations where a high reliance on trust was necessary for partner relationships to work most effectively. Short or

medium term recurrent (formal) contracts were theorized to be most appropriate for low risk relationships while relational or less formal contractual agreements best suited situations involving high risk.

This study suggests that the Ring and Van de Ven (1992) model is inappropriate for describing the governance structures of project based strategic alliances in the consulting engineering industry. The findings of this dissertation point to the relative levels of risk and not an ability to rely on trust as the determining factor for categorizing governance structures, in this case, contractual forms. Thus, if incorporated into the Ring and Van de Ven (1992) framework, the qualitative results of Hypotheses 3a to 3f suggest a modification. Recurrent (tightly written) contracts would be as effective as hierarchical organization structures and more effective than relational (loosely written) contracts in situations of high risk.

These findings are also especially interesting as they do not support two particular theoretical assertions regarding the use of contracts. The first made by Macaulay (1963) is that the preparation of contractual safeguards may have detrimental effects on the working relationship behaviour of working partners. The second is a suggestion by Ring and Van de Ven that "informal psychological contracts increasingly ....substitute for formal legal contracts in high commitment relations because of the partner's ability to rely on trust that originates from prior fair dealing" (Ring and Van de Ven, 1994; 94). The use of informal psychological contracts may indeed be increasing; however, this study questions their effectiveness. Tightly written contracts appear to be more effective than relational contracts for managing partners in the consulting engineering industry.

Finally, the study sought to explore the ***dimensions or warning signals of relational risk*** in the consulting engineering industry. The awareness of a partner's potential for surprise behaviour, and the extent of risk asymmetry facing alliance partners, were found to be significant predictors (this latter at a 0.10 level) of relational risk.

Managerial Implications

Managers actively involved in the operation of strategic alliances will find this study interesting for a number of reasons. First, if not guarded against, partnering with worrisome firms will probably lead to feelings of being treated unfairly, of less flexibility in day to day operations, and of having to spend more time and effort checking up on them. Second, when worrisome partners were involved, higher levels of haggling, monitoring efforts, and communication charges (transaction costs) were not associated with smoothly run projects. When haggling was present, feelings of being unfairly treated and of being constricted in operations were quite common.

Third, when worrisome partners are involved in project based alliances, the written contract matters. Tighter contracts accompanied projects where partners felt that they had been treated fairly and experienced higher operational flexibility. In these same situations, lower operational flexibility and feelings of being unfairly treated were associated with contracts written in a looser manner.

Fourth, some rules of thumb may be applicable to managers when dealing with different forms of risk. These are as follows.

a) If you are wary of working with a partner, put more detail into the partner contract. Looser contracts in this situation appear to be associated with lower processual performance and tighter contracts with higher processual performance.

b) If you are not wary of working with a partner, but other forms of high risk are present, assume that the other forms take precedence and write a tighter contract. Other forms of risk include participation in a project with a high dollar value, a high visibility or profile in the professional or non professional cummunites, and/or a high degree of technical complexity.

c) If you are not wary of a partner, and other forms of high risk are not present, then a lesser amount of detail may be written into a partner contract provided due

dilligence is undertaken in regards to the partner's managerial, financial and technical capabilities. Lower operational performance seems to arise when partner capabilities are taken for granted.

Fifth, if you enter into a project with a worrisome partner and do not protect yourself contractually, then expect that your monitoring costs will be higher than normal.

Finally, relational risk, or wariness of working with a partner, is relative in nature. To be more precise, if a firm fears a disaster in the making, it will not link up with the partner. In this study, cases of poor performance which were not predicted were mostly of a surprise nature to the responding firm. In these cases lower processual performance appeared to be the result of a firm not undertaking appropriate due diligence to understand partner capabilities as well as technical or managerial incompetence by the partner firm.

Limitations of the Study

This study is one of the very few which examines organizational influences in the consulting engineering industry. It also introduces a new set of performance measures to the study of project based alliances. Its findings are significant. Within this industry, the specificity of the written contract linking partners in project based strategic alliances is an important predictor of operational performance.

The strength of these findings along with the increasing use of project based relationships in the public and private sectors point to the need for further cross sectional and longitudinal studies in both this industry and others. However, the study and its results have limitations.

First, the research site and the type of alliance under examination were clearly specified. Project based strategic alliances were studied from the perspective of consulting engineering firms operating in Alberta. This narrow focus makes it difficult to make generalizations. There is a need for studies into other types of alliances, in other locations, within other industries.

Second, the alliances under study were of a temporary nature with clear starting and end dates. The same cannot be said for many longer term alliance relationships, especially those involving equity investments or formal long term strategic partnering. However, as globalization and product development costs increase, the use of temporary alliance relationships is sure to become more popular among firms seeking guidance on business paths filled with uncertainty.

Third, under examination were both companies and alliance relationships which varied in magnitiude. Multi-million dollar ventures were studied alongside projects valued in the tens of thousands. Further, firms employing thousands were included as were those whose payrolls numbered in the tens. These differences in magnitude were not captured in the analysis but may shed interesting insights at a later date.

Fourth, this dissertation has attempted to understand the impact of the alliance contract on the management of relational risk. Two limitations are important to note about this effort. For one, other instruments or actions may play a role in protecting an alliance participant from its partners. Although not analyzed for the purpose of this study, data was collected which seeks to identify these other protective mechanisms.

A second and final limitation refers to the overall importance of relational risk to project based strategic alliance partners in this industry. Although not identified before hand, the data suggests that other forms of risk may be important for understanding how alliance partners protect themselves from each other. By other forms of risk we refer to financial risk or the sheer dollar size of the alliance responsibilities; technical risk or the ongoing threat of technical failure of the services or products used or offered by the alliance participants; and, reputational risk or the potential for the alliance to damage the reputation of the alliance participants should it not meet its objectives. Indeed, these other forms of risk appear to have played a role in the unexpected results of some of this dissertation's hypotheses.

Future Research

The nature of this study's results suggest the importance of further research in four important areas. The first broad area relates to alliance performance. This study addressed the effects of contract specificity and relational risk on processual performance. Yet as discussed in Chapter 2, alliance performance may be conceptualized in any number of terms. A logical extension of this study is to examine the effects of these two variables on different concepts of performance such as profitability. Such an extension would serve to shed light on the nature of uncertainty inherent in any major project. Can project uncertainties be reasonably understood ahead of time and controlled for by means such as the written contract in order to have a meaningful effect on the bottom line? Future research might focus more specifically on the measurable dollar effects of the contract and other protective mechanisms.

The second broad area of research addresses the issue of risk. This study focused primarily on relational risk and for the most part excluded other forms of risk such as the financial implications of alliance participation, the technical complexity of a project and the potential impact of poor performance on the reputation of partner. Important questions which still need to be addressed include, "which form of risk takes precedence for alliance partners," and "by what means do partners protect themselves from these different forms of risk?"

The third area of potential future research is the nature of the consulting engineering firm itself. With the exception of occasional references, this researcher was unable to to find any published examples of empirical research involving this form of organization. Given the increasing importance of alliances, the depth of managerial understanding present in consulting engineering firms represents a vast yet untapped source of knowledge for researchers and practitioners alike. These firms represent fertile grounds for exploring questions such as "how do firms manage multiple ongoing

alliances," and "does organizational form affect alliance performance." The large range of firm size and specialties present in this industry also offer researchers numerous opportunities for comparative study.

A fourth area of potential future research is to expand this study to other settings. Project based strategic alliances have a long history of use within the motion picture, defence, and construction industries. Questions to be examined might take the form of "Do the different competitive dynamics surrounding these settings impact operational performance? Is contract specificity as significant a predictor of operational performance or do outside forces such as Defence Department regulations nullify its effect?"

Summary and Conclusions

The domestic consulting engineering industry is an industry in turmoil. A shrinking home market, more demanding clients, and higher risk major capital projects are increasingly forcing firms in this industry to co-operate as never before in order to survive. These factors have forced many firms to undertake project based work with worrisome or high relational risk partners. Within this context this study sought to empirically explore the question, "how do alliance partners manage relational risk?" and "what are the determinants of relational risk?" Relational risk was conceptualized as the "perception of opportunistic behaviour by a partner." It was hypothesized that counter to a growing stream of theoretical insight, the written contract matters.

In order to test this idea, a measure of performance throughout the life of an alliance was conceptualized. Processual performance took the form of transaction costs incurred to monitor partner behaviour, perceptions of operational flexibility, and the perceptions of fair treatment by partners.

A questionnaire and open ended questions were used to collect data from executives of 24 consulting engineering firms regarding their experiences of good and bad project based strategic alliances.

A clear linear relationship was found between the specificity or level of detail included in the partner agreement and processual performance. Statistical evidence indicated that tighter contracts were associated with perceptions of higher operational flexibility, and higher fair treatment. Qualitative evidence suggested that in situations of higher relational risk, the use of more detailed contracts led to perceptions of higher fair treatment, higher operational flexibility, and lower transaction costs among partners. When partners did not protect themselves contractually, the opposite results occurred.

How might consulting engineering firms gauge how much risk a partner adds to an alliance relationship? This study found that the best indicator of trouble is a company's awareness that a partner's actions might be a surprise. A second indicator is a large difference in the financial risk tolerance or importance of the project for each partner.

The significance of these results, the increasing use of project based alliances, and the similarity of such alliance forms to commonly used sub-contract arrangements point to the need for further research and the generalizability of these findings beyond the consulting engineering industry.

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